



Data Management Plan

Deliverable D6.6

Project title	Physical Internet and the Key steps to Innovation-driven supply chain transformation towards Green, Affordable, scalable and collaborative Zero-Emissions Freight Transport solutions
Call	HORIZON-CL5-2024-D6-01
Type of action	HORIZON-IA
Project starting date	1 July 2025
Project duration	42 months
Project coordinator	FIT CONSULTING SRL

Document information

Deliverable title	D6.6 – Data Management Plan
Related WP and title	WP6 – Project Management and Coordination
Related deliverable(s)	D6.7 – Data Management Plan v2 D6.8 – Data Management Plan v3 D6.9 – Data Management Plan v4
Lead beneficiary	ICCS
Responsible author(s)	Anastasia Roukouni (ICCS) and Giannis Kanellopoulos (ICCS)
Contributor(s)	Paola Astegiano (FIT) Yuliya Sahitava (ALICE) Pablo Segura (ALICE) Kai-Wing So (GS1) Fabrizio Borgogna (GRUBER) Stefania Pesavento (PNO) Andreas Nettsträter (OLF) Eric Ballot (MINES)
Reviewer(s)	Paola Astegiano (FIT) Pablo Segura (ALICE)
Version	1.0
Deliverable type	DMP – Data Management Plan
Dissemination level	Public
Planned delivery date	31 December 2025
Actual delivery date	24 December 2025

QUALITY CONTROL (includes peer & quality control reviewing)	
Reviewer(s)	Main changes
Name (Organisation)	
Paola Astegiano (FIT)	Minor revisions
Pablo Segura (Alice)	Minor revisions

DOCUMENT HISTORY			
Version	Date	Created/Amended by	Changes
0.1	01/08/2025	Anastasia Roukouni & Giannis Kanellopoulos	Table of Contents
0.2	15/09/2025	Anastasia Roukouni	First draft
0.3	30/10/2025	Anastasia Roukouni	Second draft
0.4	05/12/2025	Anastasia Roukouni	Input from partners received
0.5	11/12/2025	Anastasia Roukouni	Consolidation of input – Final draft ready for review
0.6	12/12/2025	Paola Astegiano	Minor revisions
0.7	15/12/2025	Pablo Segura	Minor revisions
Final	17/12/2025	Anastasia Roukouni & Giannis Kanellopoulos	Reviewers' feedback incorporated – deliverable ready for submission

DISCLAIMER



Funded by
the European Union

Funded by the European Union under Grant Agreement No 101202912. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

COPYRIGHT MESSAGE

©IKIGAI Consortium, 2025-2029. This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both. Reproduction is authorised provided the source is acknowledged.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS AND DEFINITIONS	7
LIST OF TABLES.....	8
1. EXECUTIVE SUMMARY	9
2. INTRODUCTION	9
2.1 IKIGAI in a Nutshell	9
2.2 Deliverable Objectives	10
2.3 Deliverable mapping to GA Requirements	10
2.4 Intended audience	11
3. DATA SUMMARY	12
3.1 Will you re-use any existing data and what will you re-use it for?	12
3.2 What types and formats of data will the project generate or re-use?	12
3.3 What is the purpose of the data generation or re-use and its relation to the objectives of the project?	13
3.4 What is the expected size of the data that you intend to generate or re-use?	14
3.5 What is the origin/provenance of the data, either generated or re-used?	14
3.6 To whom might your data be useful ('data utility'), outside your project?	14
4. FAIR DATA	15
4.1 Making data findable, including provisions for metadata	15
4.1.1 Will data be identified by a persistent identifier?	15
4.1.2 Will rich metadata be provided to allow discovery? What metadata will be created? What disciplinary or general standards will be followed?	15
4.1.3 Will search keywords be provided in the metadata to optimize the possibility for discovery and then potential re-use?	16
4.1.4 Will metadata be offered in such a way that it can be harvested and indexed?	17
4.2 Making data accessible	17
4.2.1 Repository	17
4.2.1.1 Will the data be deposited in a trusted repository?	17
4.2.1.2 Have you explored appropriate arrangements with the identified repository where your data will be deposited?	17
4.2.1.3 Does the repository ensure that the data is assigned an identifier? Will the repository resolve the identifier to a digital object?	18
4.2.2 Data	18
4.2.1.4 Will all data be made openly available? If certain datasets cannot be shared (or need to be shared under restricted access conditions), explain why, clearly separating legal and contractual reasons from intentional restrictions. Note that in multi-beneficiary projects it is also	

possible for specific beneficiaries to keep their data closed if opening their data goes against their legitimate interests or other constraints as per the Grant Agreement.	18
4.2.1.5. If an embargo is applied to give time to publish or seek protection of the intellectual property (e.g. patents), specify why and how long this will apply, bearing in mind that research data should be made available as soon as possible.	18
4.2.1.6. Will the data be accessible through a free and standardized access protocol?	19
4.2.1.7. If there are restrictions on use, how will access be provided to the data, both during and after the end of the project?	19
4.2.1.8. How will the identity of the person accessing the data be ascertained?	19
4.2.1.9. Is there a need for a data access committee (e.g. to evaluate/approve access requests to personal/sensitive data)?.....	19
4.2.3 Metadata	19
4.2.1.10. Will metadata be made openly available and licensed under a public domain dedication CC0, as per the Grant Agreement? If not, please clarify why. Will metadata contain information to enable the user to access the data?	20
4.2.1.11. How long will the data remain available and findable? Will metadata be guaranteed to remain available after data is no longer available?	20
4.2.1.12. Will documentation or reference about any software be needed to access or read the data be included? Will it be possible to include the relevant software (e.g. in open source code)? 20	
4.3 Making data interoperable.....	20
4.3.1 What data and metadata vocabularies, standards, formats or methodologies will you follow to make your data interoperable to allow data exchange and re-use within and across disciplines? Will you follow community-endorsed interoperability best practices? Which ones?..	20
4.3.2 In case it is unavoidable that you use uncommon or generate project specific ontologies or vocabularies, will you provide mappings to more commonly used ontologies? Will you openly publish the generated ontologies or vocabularies to allow reusing, refining or extending them? ...	21
4.3.3 Will your data include qualified references to other data (e.g. other data from your project, or datasets from previous research)?	21
4.4 Increase data re-use	21
4.4.1 How will you provide documentation needed to validate data analysis and facilitate data re-use (e.g. readme files with information on methodology, codebooks, data cleaning, analyses, variable definitions, units of measurement, etc.)?.....	21
4.4.2 Will your data be made freely available in the public domain to permit the widest re-use possible? Will your data be licensed using standard reuse licenses, in line with the obligations set out in the Grant Agreement?	22
4.4.3 Will the data produced in the project be useable by third parties, in particular after the end of the project?	22
4.4.4 Will the provenance of the data be thoroughly documented using the appropriate standards?	22
4.4.5 Describe all relevant data quality assurance processes.	22
5. OTHER RESEARCH OUTPUTS	23
5.1 In addition to the management of data, beneficiaries should also consider and plan for the management of other research outputs that may be generated or re-used throughout their projects.	

Such outputs can be either digital (e.g. software, workflows, protocols, models, etc.) or physical (e.g. new materials, antibodies, reagents, samples, etc.).	23
5.2 Beneficiaries should consider which of the questions pertaining to FAIR data above, can apply to the management of other research outputs, and should strive to provide sufficient detail on how their research outputs will be managed and shared, or made available for re-use, in line with the FAIR principles.	23
6. ALLOCATION OF RESOURCES.	23
6.1 What will the costs be for making data or other research outputs FAIR in your project (e.g. direct and indirect costs related to storage, archiving, re-use, security, etc.)?	23
6.2 How will these be covered? Note that costs related to research data/output management are eligible as part of the Horizon Europe grant (if compliant with the Grant Agreement conditions)	23
6.3 Who will be responsible for data management in your project?	24
6.4 How will long term preservation be ensured? Discuss the necessary resources to accomplish this (costs and potential value, who decides and how, what data will be kept and for how long)?	24
7. DATA SECURITY.	24
7.1 What provisions are or will be in place for data security (including data recovery as well as secure storage/archiving and transfer of sensitive data)?	24
7.2 Will the data be safely stored in trusted repositories for long term preservation and curation?	24
8. ETHICS	24
8.1 Are there, or could there be, any ethics or legal issues that can have an impact on data sharing? These can also be discussed in the context of the ethics review. If relevant, include references to ethics deliverables and ethics chapter in the Description of the Action (DoA).	24
8.2 Will informed consent for data sharing and long-term preservation be included in questionnaires dealing with personal data?	26
9. OTHER ISSUES	26
Do you, or will you, make use of other national/funder/sectorial/departmental procedures for data management? If yes, which ones (please list and briefly describe them)?	26
10. CONCLUSIONS	26

LIST OF ABBREVIATIONS AND DEFINITIONS

ABBREVIATION/TERM	DESCRIPTION
ALICE	Alliance for Logistics Innovation through Collaboration in Europe
CC-BY	Creative Commons Attribution Licence
CC0	Creative Commons Zero (Public Domain Dedication)
CA	Consortium Agreement
CINEA	European Climate, Infrastructure and Environment Executive Agency
CSV	Comma-Separated Values
DMP	Data Management Plan
DNSH	Do No Significant Harm
DoA	Description of the Action
DOI	Digital Object Identifier
EC	European Commission
ECHR	European Convention on Human Rights
EGE	European Group on Ethics in Science and New Technologies
ENERI	European Network for Research Ethics and Integrity
EU	European Union
FAIR	Findable, Accessible, Interoperable, Reusable
GA	Grant Agreement
GDPR	General Data Protection Regulation ((EU) 2016/679)
HE	Horizon Europe
ICCS	Institute of Communication and Computer Systems
KPI	Key Performance Indicator
LI	Logistics Innovation
MS	Milestone
NDA	Non-Disclosure Agreement
OAI-PMH	Open Archives Initiative Protocol for Metadata Harvesting
ORE	Open Research Europe
PC	Project Coordinator
PO	Project Officer
PI	Physical Internet
PID	Persistent Identifier
WP	Work Package
XLS / XLSX	Microsoft Excel file formats

LIST OF TABLES

Table 1 Deliverable Adherence to GA Deliverables and Work Description	10
Table 2 Types and formats of data used within WP6 of IKIGAI	12

1. EXECUTIVE SUMMARY

Deliverable D6.6 presents the initial Data Management Plan of IKIGAI. This plan follows the Horizon Europe Data Management Plan template available on the EU Funding & Tenders Portal¹ and outlines the procedures by which all data and digital research outputs of IKIGAI will be handled throughout the project's duration and after its completion, ensuring alignment with the FAIR principles (findable, accessible, interoperable, re-usable) and compliance with ethical and legal standards.

As a living document, the Data Management Plan (DMP) will be reviewed and updated periodically (with three more iterations in M18, M30 and M42 of the project – D6.7 – 9), to reflect new requirements, evolving project needs and potential adjustments arising from technological or/and regulatory developments.

The remainder of the deliverable is structured as follows:

- Introduction – Presents the objectives of the deliverable, describes its scope within IKIGAI and identifies the intended audience.
- Data Summary – Provides an overview of the types, formats, sources and purposes of the data generated or re-used in IKIGAI.
- FAIR Data – Explains how the project will ensure that data remain findable, accessible, interoperable and re-usable, focusing among others on metadata and repositories.
- Other Research Outputs – Details any additional digital outputs produced in the project that are not included in the primary dataset descriptions.
- Allocation of Resources: Outlines any costs, infrastructure, and responsibilities associated with data management activities.
- Data Security: Describes the technical and organisational measures in place to ensure secure storage, controlled access, and safe processing of data.
- Ethics: Summarises ethical considerations related to data collection, processing, sharing and long-term preservation, and explains how compliance with ethical principles and regulations will be guaranteed.
- Other issues – Includes any additional aspects relevant to data management that do not fit into the previous categories.

As ICCS is the partner responsible for preparing the DMP, the document follows standard structures, formulations and methodological elements commonly used in Horizon Europe Data Management Plans previously developed by ICCS in similar projects (e.g. AutoMoTIF²) and therefore certain similarities in standardised sections are expected.

2. INTRODUCTION

2.1 IKIGAI IN A NUTSHELL

IKIGAI's goal is to accelerate the realisation of the Physical Internet (PI) by 2040 and achieve decarbonized freight transport and logistics by 2050. The project focuses on the establishment of affordable, collaborative, and coordinated Systems of Logistics Networks across Europe. It promotes the adoption of open standardised processes to enhance efficiency and reduce emissions, aligning with the UN 2030 sustainable development agenda. IKIGAI will scale up five

¹ <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/reference-documents?programmePeriod=2021-2027&frameworkProgramme=43108390>

² D6.3 Initial Ethics and Data Management Plan. Horizon Europe Project AutoMoTIF, GA no: 101147693.

complementary and forward-looking Logistics Innovations (LIs) (advancing them from TRL5 to 8, looking also into other scalability aspects e.g. regulation, market and social), building collaboration on shared resources and capacity, respect, openness, transparency and trust:

- [LI1] Online and offline trustee matchmaking and volume pooling for electrification and increased intermodality,
- [LI2] eFTI compliance Collaborative Service Platform for SMEs,
- [LI3] Smart and synchromodal hubs for hyperconnected urban logistics,
- [LI4] Intelligent, standard end-to-end chain of custody for carbon emission calculation,
- [LI5] Open volume pooled governance for reusable standard modular boxes.

Recognising that companies can better evolve collaboratively, aligning logistics and decarbonisation within a unified transition path, IKIGAI will drive the Twin Transition to net-zero logistics by mobilising an open and collaborative ecosystem of global supply chain players committed to systemic change. Beyond adopting the LIs and testing them in real-world pilots, IKIGAI will re-engineer supply chain logistics services such as volume pooling/asset sharing, warehousing, freight forwarding/intermodality, cross-docking and last-mile delivery.

2.2 DELIVERABLE OBJECTIVES

2.3 DELIVERABLE MAPPING TO GA REQUIREMENTS

Table 1 Deliverable Adherence to GA Deliverables and Work Description

IKIGAI GA Item	IKIGAI GA Item Description	DR Chapter(s)	Justification
DELIVERABLE			
D6.4: Data Management Plan	Report on the data to be generated and processed; handling methods of data during/beyond IKIGAI	All	This deliverable presents the Data Management Plan of IKIGAI. Committed adherence to the implementation of these imperative elements, will align each Deliverable with the project's overall established standards and policies, ultimately leading to successful outputs.
TASK 6.3 Data Management Plan (ICCS)			
	According to the GA, this task develops the interim and final DMP (M6, M36, M42) and describes the data and metadata collection and management lifecycle, ensuring compliance with FAIR (Findable, Accessible, Interoperable and Reusable) principles. The DMP will evolve	Chapter 3 to 7, 9	These chapters elaborate on all aspects of the IKIGAI Data Management Plan, following the Horizon Europe DMP template.

	over the project lifetime to reflect the pilot data management and will define how/if data will be shared/made open, curated, and preserved. The final DMP will define datasets that will be made openly available and accessible to the scientific, academic, and industrial communities. A Data Protection Officer will be identified by each partner to oversee procedures to protect personal and critical data collected during the project and limit unauthorised use or sharing.		
TASK 6.1: Project coordination and ethics (FIT)			
ST6.1.4 Ethics respecting Policies (ICCS)	The Ethics framework described in D6.4 Ethics, Gender, and Inclusivity Guide of IKIGAI has strong interconnections with this deliverable, as the two deliverables were developed in close collaboration. The reason is that some aspects of the Ethics self-assessment (presented in D6.4) such as the use of personal data in the context of interviews and/or surveys in IKIGAI, and ensuring the employment of FAIR principles while collecting, processing and storing the data are defined herein. Moreover, the standard Horizon Europe DMP template has a chapter (Chapter 8 in the presented document) dedicated to Ethics. Therefore, D6.4 serves as input for this specific chapter.	Chapter 8	This chapter is built upon D6.4 of IKIGAI.

2.4 INTENDED AUDIENCE

The dissemination level of D6.4 is “Public”, therefore the deliverable is intended to be read by a broad audience, within and beyond the IKIGAI consortium, such as policy makers and regulators, public authorities, academics and researchers, developers and innovation practitioners, decision – makers as well as citizens’ organisations.

3. DATA SUMMARY

3.1 WILL YOU RE-USE ANY EXISTING DATA AND WHAT WILL YOU RE-USE IT FOR?

In the context of IKIGAI, existing data will be re-used to support modelling, pilot preparation, benchmarking, innovation development, model validation and project management. Categories of existing data can include publicly available transport and logistics datasets (e.g. from Eurostat, EU open repositories, prior EU-funded projects, or relevant open data portals), existing Physical Internet (PI)-related ontologies and standards, existing operational datasets provided by partners. Examples of operational and logistics data that can be used for benchmarking include truck fill rates, packaging waste reduction, driving distances for deliveries, washing, flow history and logistic site locations etc. In addition to that, some operational transport data (e.g., shipment details, routing, fuel/energy data) will be re-used to support the emission-accounting activities and the decarbonisation assessment.

Moreover, to support stakeholder engagement and outreach activities, WP5 of IKIGAI will re-use the project partners' database, which remains strictly internal to each respective partner and will not be disclosed to other partners. WP5 will also re-use publicly available data and content from previous EU-funded projects relevant to the PI concept. Only public sources, properly licensed or openly accessible, will be used within the PI Observatory. Aggregated data from LinkedIn, the IKIGAI website, and the ALICE YouTube channel will be used only in analytical reports. No sensitive or proprietary data will be re-used. All re-used datasets will be properly cited in projects outputs.

3.2 WHAT TYPES AND FORMATS OF DATA WILL THE PROJECT GENERATE OR RE-USE?

IKIGAI will generate or re-use data that include:

- Experimental and simulated data (e.g. CSV, JSON, XLSX formats)
- Documentation, metadata, and reports (e.g. DOCX, PDF)
- Configuration files, scripts, and code snippets (e.g. TXT, PY, YAML)

In particular, WP5 will generate or re-use data in the following formats: DOCX, PDF, XLSX, CSV, PPTX, PNG, SVG, JPEG, HTML, MP4, and MP3. A single stakeholder master register will be created during stakeholder mapping. It will be stored both on ALICE's internal SharePoint managed by ALICE and on the IKIGAI SharePoint managed by FIT Consulting. In addition, a newsletter subscriber database will be maintained. No commercially sensitive information is expected in collaboration agreements or onboarding dossiers. If such data appear, they will be labelled confidential and stored in restricted folders. In the context of WP6, the data types included in Table 2 will be generated. In the next iteration of this deliverable (D6.7) we expect to have a similar table for all WPs/LIs.

Table 2 Types and formats of data used within WP6 of IKIGAI

Generated Data	Description	Personal Data Identification (Y/N)	Data Origin	Data format	Confidentiality
----------------	-------------	------------------------------------	-------------	-------------	-----------------

Contact details	Partners' contact details	Y	Project partners	.Xls	Confidential
Nishida Circle contact details	Nishida Circle contact details	Y	Members of the Nishida Circle	.Xls	Confidential
List of risks	A risk register that will be constantly updated.	N	Project partners	.Xls	Confidential
Periodic Reports	Project Periodic report and Financial reports (internal and towards EC)	N	Project partners	.Xls, .doc, .doc, .pdf	Confidential
List of reviewers	List of deliverables' reviewers	N	Project partners	.Xls, .pdf	Confidential

3.3 WHAT IS THE PURPOSE OF THE DATA GENERATION OR RE-USE AND ITS RELATION TO THE OBJECTIVES OF THE PROJECT?

Data will be used for different purposes in the context of IKIGAI. For example, for the Logistics Innovations (LIs), data will be used to optimize logistics operations and design scenarios that will both optimize delivery processes and set the basis for scaling. The generated and re-used data will support the design, implementation, and validation of innovative methods and tools developed under the LIs. For example, the data output from simulation and optimisation processes can be used to build scenarios in order to demonstrate open pooled governance for reusable modular boxes at scale, analyse synchromodality options, enable better truck fill rates, reduce packaging waste, and enhance automation, provide evidence for compliance with the PI Norm, support decarbonisation through improved logistics efficiency etc.

The data contribute directly to achieving the technical and scientific objectives of the overall IKIGAI project—particularly in the evaluation of key performance indicators and the assessment of system performance and user impact. In WP5, the data generated and re-used are leveraged to support outreach and engagement with key stakeholder groups, track and analyse market uptake and communication impact and monitor dissemination and exploitation KPIs. In WP6, the generated data will be used for internal communication and correct project implementation, for collecting feedback/input on project activities, for monitoring of potential risk to allow prediction and for the identification and mitigation of those risks. Moreover, the generated data will be used for the monitoring of project status both in terms of technical activities and use of resources and for the quality control of the output.

3.4 WHAT IS THE EXPECTED SIZE OF THE DATA THAT YOU INTEND TO GENERATE OR RE-USE?

The size of data that are going to be generated or re-used in the context of IKIGAI's LIs cannot be estimated at the submission stage of this deliverable but it is expected to be moderate. More information will be included in the interim version of the DMP (D6.7 – M18). For WP5 and WP6, the following estimation is made:

- Documents, briefs, and slides: 2-5 GB.
- Video content: approximately 5-6 short videos (1–3 minutes each) (total estimated data volume: below 10 GB)
- Contact details: 120 – 150 KB
- Nishida Circle: 10 – 20 KB
- List of risks: 30 – 50 KB
- Periodic reports: 5 – 10 MB.
- List of reviewers: 30 – 50 KB.

3.5 WHAT IS THE ORIGIN/PROVENANCE OF THE DATA, EITHER GENERATED OR RE-USED?

The IKIGAI data will be originated from internal historical datasets from partners, standardisation and regulatory sources (e.g. eFTI), public and open datasets (e.g. Eurostat, national transport authorities, emissions databases, previous EU project outputs), from stakeholders participating in engagement activities (e.g. via surveys, interviews and workshops), system and tools developed within the project. Generated data will originate from internal experimental work, simulations, and project-developed prototypes and real-life demonstrations or IT tools such as ERP and TMS. Re-used data will come from publicly available, properly cited open sources (e.g., EU Open Data Portal or similar repositories) or from project's partners datasets/other project's results. Event registrations will be processed via either the ALICE website or the IKIGAI website (both managed by ALICE). Social metrics will originate from official IKIGAI channels (LinkedIn, website) and the ALICE YouTube channel.

3.6 TO WHOM MIGHT YOUR DATA BE USEFUL ('DATA UTILITY'), OUTSIDE YOUR PROJECT?

The data generated and re-used in IKIGAI is expected to have significant value for multiple stakeholder groups beyond the project, particularly in the domains of PI development, logistics optimization, freight transport decarbonization, twin transition. Potential external users include public authorities and policy makers, industry, logistics operators and technology providers, research and academic organisations, standardization bodies and PI governance actors, other EU projects and innovation ecosystems and the general public. In particular, the IKIGAI data could be useful to researchers and developers working on AI-based innovation methodologies and sustainability frameworks, EU-funded project teams developing similar digital

transformation or human-centric innovation tools and policy and decision-makers seeking evidence-based insights related to innovation ecosystems. Depending on confidentiality constraints that are discussed in Section 4.2.2 of this report, different datasets and outputs will be made publicly available.

4. FAIR DATA

4.1 MAKING DATA FINDABLE, INCLUDING PROVISIONS FOR METADATA

As described in detail in deliverable D5.1, IKIGAI research partners will publish scientific articles, technical papers, conference contributions and methodological outputs in peer-reviewed journals and at recognised conferences. The publications will comply with Horizon Europe's open-access requirements and will be made accessible via the IKIGAI website, the PI Observatory, and institutional repositories.

To facilitate accessibility and long-term preservation, scientific outputs may be published via Open Research Europe (ORE)³, the European Commission's open-access publishing platform, which provides free publication and transparent peer review. Preprints, datasets and supporting materials may also be deposited in Zenodo⁴ to ensure persistent identifiers and long-term availability. Zenodo is an online repository that supports Open Science, is aligned with the EU Open Data Policy (developed under the EU OpenAIRE⁵ (Open Access Infrastructure for Research in Europe) program) and supports the FAIR data principles⁶.

Outputs published on ORE, Zenodo or institutional repositories will be automatically indexed by OpenAIRE, enabling them to be discovered more easily across European research infrastructures. Zenodo will also be used to store selected public deliverables and training materials developed within the PI Augmenter Kit, as well as technical artefacts that support replicability. For more information, please see IKIGAI D5.1.

4.1.1 WILL DATA BE IDENTIFIED BY A PERSISTENT IDENTIFIER?

All publicly shared datasets, publications and relevant digital outputs resulting from the IKIGAI project will be assigned appropriate Persistent Identifiers (PIDs) to ensure long-term accessibility, traceability and citability. Zenodo (see also Section 4.1) automatically assigns a Digital Object Identifier (DOI) to each item that is deposited there. Publications made available through ORE will also receive DOIs. Institutional repositories used by IKIGAI partners typically support DOI assignment via DataCite or Crossref; in case this is not available, a stable persistent URL will be provided. Internal, confidential or restricted data will not be assigned public PIDs and will remain stored under controlled access within consortium – managed secure environments (e.g. SharePoint). All data intended for public dissemination or re-use will be references through citable PIDs, in line with Horizon Europe FAIR data requirements.

4.1.2 WILL RICH METADATA BE PROVIDED TO ALLOW DISCOVERY? WHAT METADATA WILL BE CREATED? WHAT DISCIPLINARY OR GENERAL STANDARDS WILL BE FOLLOWED?

³ <https://open-research-europe.ec.europa.eu/>

⁴ <https://zenodo.org/>

⁵ <https://openscience.eu/article/infrastructure/openaire>

⁶ <https://about.zenodo.org/principles/>

In cases when this is possible, rich metadata will be provided to allow discovery. Zenodo utilizes JSON-format to store metadata, which then can be exported in several standard formats such as the Dublic Core⁷ Metadata Initiative and DataCite⁸ Metadata Schema. OpenAIRE uses the OAI-PMH v2.0 protocol⁹ for harvesting metadata sets. Zenodo's metadata is compliant with the DataCite's Metadata Schema minimum and recommended terms (latest version: Metadata Schema 4.6¹⁰, released on 5 December 2024). According to it, the mandatory properties are:

- Identifier
- Creator
- Title
- Publisher
- Publication year
- Resource Type

There is also a list of recommended and optional properties, that can be found below.

Recommended:

- Subject
- Contributor
- Date
- Related identifier
- Geo location

Optional:

- Language
- Alternate identifier
- Size
- Format
- Version
- Rights
- Funding reference
- Related item

The IKIGAI metadata sets will include as many of the recommended and optional attributes as possible, to facilitate findability and re-use.

4.1.3 WILL SEARCH KEYWORDS BE PROVIDED IN THE METADATA TO OPTIMIZE THE POSSIBILITY FOR DISCOVERY AND THEN POTENTIAL RE-USE?

Search keywords will be provided in the IKIGAI metadata sets to increase discoverability and potential re-use. Zenodo is indexed by Google Search and by Google Dataset Search, as they both rely on embedded schema.org metadata, therefore the careful selection of relevant keywords will ensure optimizing the possibility of finding and re-using the datasets. They selected keywords

⁷ <https://www.dublincore.org/resources/metadata-basics/>

⁸ <https://schema.datacite.org/>

⁹ <https://www.openarchives.org/OAI/openarchivesprotocol.html>

¹⁰ <https://doi.org/10.14454/mzv1-5b55>

will reflect core IKIGAI concepts (e.g. PI, synchromodality, decarbonisation, logistics optimisation) and use commonly accepted terminology to maximise interoperability and alignment with existing research communities.

4.1.4 WILL METADATA BE OFFERED IN SUCH A WAY THAT IT CAN BE HARVESTED AND INDEXED?

As already described in Sections 4.1.2 and 4.1.3 all metadata published in Zenodo will be able to be harvested via the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) v2.0 and metadata will be indexed by Google Dataset Search. Moreover, following the DOI registration on Zenodo, metadata is sent to DataCite servers and is indexed there.

4.2 MAKING DATA ACCESSIBLE

4.2.1 REPOSITORY

4.2.1.1. WILL THE DATA BE DEPOSITED IN A TRUSTED REPOSITORY?

As already stated in Section 4.1, IKIGAI's outputs will be published on ORE, Zenodo or institutional repositories. Open Research Europe (ORE) publishes results originating from European Commission funded research. It is a peer-reviewed publishing service that promotes open science principles by offering the opportunity for publishing research results in full compliance with the open access requirements of the project's grant agreement¹¹. The Open Data Policy is aligned to the Horizon Europe requirements for research data management, as described in Article 17 of the Model Grant Agreement¹². As ORE is primarily a publication platform, before submission to ORE, any datasets should be deposited in an appropriate data repository, such as Zenodo.

Zenodo is considered trusted, reliable and safe, as the research outputs published there are stored using CERN's repository software INVENIO, which is employed by some of the world's largest repositories such as INSPIRE HEP and CERN Document Server. Data files as well as metadata are kept in multiple online replicas, and a back-up is kept daily¹³. In case IKIGAI partners use institutional repositories, it will be made sure that these repositories comply with international and EU standards (e.g. OpenAIRE, Dublin Core) to ensure traceability and interoperability. More information about the exact institutional repositories that will be used for data deposition in the context of IKIGAI, will be included in the next versions of this DMP (D6.7 – 9).

4.2.1.2. HAVE YOU EXPLORED APPROPRIATE ARRANGEMENTS WITH THE IDENTIFIED REPOSITORY WHERE YOUR DATA WILL BE DEPOSITED?

No special arrangements are needed at this point, as Zenodo will be the primary repository for datasets, public deliverables, training materials and other research outputs. Zenodo allows uploading 50GB per record with a maximum of 100 files, which is considered sufficient for the IKIGAI data, metadata and research outputs (see also Section 3.4). In case it is needed, Zenodo can grant one-time quota of up to 200GB for a single record¹⁴, but we do not foresee that such functionality would be necessary. ORE, which will be used for IKIGAI's scientific publications,

¹¹ <https://www.openaire.eu/open-research-europe-an-update>

¹² <https://open-research-europe.ec.europa.eu/for-authors/data-guidelines/>

¹³ <https://www.openaire.eu/zenodo-make-your-research-visible>

¹⁴ <https://support.zenodo.org/help/en-gb/1-upload-deposit/80-what-are-the-size-limitations-of-zenodo>

accepts supplementary files but it is not intended for hosting large datasets, therefore datasets will be deposited in Zenodo and linked to the corresponding publications by DOI. ORE is a fully open-access platform funded by the EU and no additional arrangements are required for its use. In the case of institutional repositories, no additional arrangements are necessary, as partners already have access through their institutions.

**4.2.1.3. DOES THE REPOSITORY ENSURE THAT THE DATA IS ASSIGNED AN IDENTIFIER?
WILL THE REPOSITORY RESOLVE THE IDENTIFIER TO A DIGITAL OBJECT?**

As described in Section 4.1.1, a DOI is automatically assigned to all items uploaded on Zenodo and all publications uploaded on ORE (see in the same section the information about institutional repositories). When using this DOI in any internet browser, the user will be taken directly to the dataset's page, which is a critical functionality for ensuring that IKIGAI's datasets will be easily accessible.

4.2.2 DATA

4.2.1.4. WILL ALL DATA BE MADE OPENLY AVAILABLE? IF CERTAIN DATASETS CANNOT BE SHARED (OR NEED TO BE SHARED UNDER RESTRICTED ACCESS CONDITIONS), EXPLAIN WHY, CLEARLY SEPARATING LEGAL AND CONTRACTUAL REASONS FROM INTENTIONAL RESTRICTIONS. NOTE THAT IN MULTI-BENEFICIARY PROJECTS IT IS ALSO POSSIBLE FOR SPECIFIC BENEFICIARIES TO KEEP THEIR DATA CLOSED IF OPENING THEIR DATA GOES AGAINST THEIR LEGITIMATE INTERESTS OR OTHER CONSTRAINTS AS PER THE GRANT AGREEMENT.

Not all data generated or re-used in IKIGAI can be made openly available. The project will apply the principle “as open as possible, as closed as necessary” and will make publicly accessible all datasets, documents and materials that can be shared without violating legal, contractual, ethical or commercial constraints. Examples of data that cannot be shared include personal data (as described in the table of section X), specific operational logistics datasets, internal project documentation etc. These datasets will remain in the partner organization which is the data owner. In cases when a dataset is restricted, metadata with data description and the reasons that led to restricted access will be openly shared in the repository. Sharing of non-personal, restricted data under controlled conditions (e.g. upon request, NDA, other agreements) will be assessed on a case-by-case basis.

4.2.1.5. IF AN EMBARGO IS APPLIED TO GIVE TIME TO PUBLISH OR SEEK PROTECTION OF THE INTELLECTUAL PROPERTY (E.G. PATENTS), SPECIFY WHY AND HOW LONG THIS WILL APPLY, BEARING IN MIND THAT RESEARCH DATA SHOULD BE MADE AVAILABLE AS SOON AS POSSIBLE.

No embargo is considered necessary in the scope of the project until the moment this deliverable report is submitted, therefore the application of an embargo in the context of IKIGAI and throughout its lifetime is not foreseen. The consortium intends to make all non-sensitive, non-confidential datasets openly available as soon as they are validated and linked to a corresponding publication or deliverable. If an embargo to part of the data is decided for any reason during the project, information about it will be included in the next iterations of this DMP

(interim and/or final – D6.7-9). Zenodo supports embargo status; the repository can restrict access to a dataset until the end of a specific period. In case an embargo is absolutely necessary, it will be kept short and lifted as soon as possible.

4.2.1.6. WILL THE DATA BE ACCESSIBLE THROUGH A FREE AND STANDARDIZED ACCESS PROTOCOL?

All openly shared data and metadata produced within IKIGAI will be accessible through free and standardised access protocols. In Zenodo, ORE and most institutional repositories access to data and metadata files is provided over standard protocols such as HTTP/HTTPS and OAI-PMH.

4.2.1.7. IF THERE ARE RESTRICTIONS ON USE, HOW WILL ACCESS BE PROVIDED TO THE DATA, BOTH DURING AND AFTER THE END OF THE PROJECT?

In case of restricted datasets, as described in Section 4.2.1.4 of this report, the contact details of at least one person per owner organization will be provided in the next iteration of this deliverable (D6.7), to be used as information point for the respective datasets or if access is essential due to regulatory reasons, during or after the end of the project.

4.2.1.8. HOW WILL THE IDENTITY OF THE PERSON ACCESSING THE DATA BE ASCERTAINED?

For datasets and publications made openly available, no user identification is required. Zenodo does not require user identification for downloading open files. It tracks an anonymized visitor ID for each view/download event, which changes for a user every 24 hours. For security purposes, Zenodo also keeps a web server access log which includes the user's IP address and their browser's user agent string. This log is automatically deleted after maximum 1 year and is strictly separated from usage statistics¹⁵. In ORE, publications and supplementary materials are openly accessible without user login. In the case of institutional repositories no personal identify verification is required as well (additional details for the specific institutional repositories that will be used in the context of IKIGAI will be provided in D6.7).

4.2.1.9. IS THERE A NEED FOR A DATA ACCESS COMMITTEE (E.G. TO EVALUATE/APPROVE ACCESS REQUESTS TO PERSONAL/SENSITIVE DATA)?

It is not considered necessary to establish a dedicated data access committee in IKIGAI as the project does not generate or process large-scale sensitive personal data, biomedical data or similar data categories. Restricted datasets will be governed by data-owners (partners) who retain full authority to approve or reject access requests. Any issues regarding data access will be discussed on the Steering Committee level, either during one of its regular monthly meetings or in a meeting that will be especially organized for this reason. In case it is needed, an ad hoc cross-WP/pilot group will be formed to ensure coordinated decision – making.

4.2.3 METADATA

¹⁵ <https://zenodo.org/help/statistics>

4.2.1.10. WILL METADATA BE MADE OPENLY AVAILABLE AND LICENSED UNDER A PUBLIC DOMAIN DEDICATION CC0, AS PER THE GRANT AGREEMENT? IF NOT, PLEASE CLARIFY WHY. WILL METADATA CONTAIN INFORMATION TO ENABLE THE USER TO ACCESS THE DATA?

All metadata associated with IKIGAI datasets, deliverables and publications will be made openly available and released under the Creative Commons Zero (CC0) licence. It should be highlighted that scientific publications (which in some cases could include metadata or information about datasets with restricted access, as described in Section 4.2.1.4) will be licenced using the latest available version of Creative Commons Attribution International Public Licence (CC-BY-4.0¹⁶) as this is an obligation under Horizon Europe¹⁷. The metadata will include sufficient information to allow any interested user to locate and access the corresponding datasets.

4.2.1.11. HOW LONG WILL THE DATA REMAIN AVAILABLE AND FINDABLE? WILL METADATA BE GUARANTEED TO REMAIN AVAILABLE AFTER DATA IS NO LONGER AVAILABLE?

For datasets and publications deposited in trusted repositories, long-term availability and findability are ensured. According to Zenodo's policy, data and metadata are retained for the lifetime of the repository, which currently coincides with the lifetime of CERN (host laboratory). CERN has an experimental programme defined for at least 20 years ahead. Publications made available through ORE or institutional repositories are hosted in trusted platforms designed to support long-term preservation and sustainable open access, in line with Horizon Europe and OpenAIRE guidance on repositories. Datasets that will not be published in Zenodo, in line with the restrictions discussed in Section 4.2.1.4 will be maintained in the owner organization following its corresponding archiving policies. These policies will be clearly described in the forthcoming D6.7 and/or D6.8-9, when more information about any restrictions to datasets will be available to the IKIGAI consortium members.

4.2.1.12. WILL DOCUMENTATION OR REFERENCE ABOUT ANY SOFTWARE BE NEEDED TO ACCESS OR READ THE DATA BE INCLUDED? WILL IT BE POSSIBLE TO INCLUDE THE RELEVANT SOFTWARE (E.G. IN OPEN SOURCE CODE)?

The published metadata will include information about any software needed to access or read the data (e.g. to run the simulation models developed in the context of IKIGAI), but it will be solely the user's responsibility to obtain the relevant software. Software programs that will be used in the IKIGAI simulations are available either as commercial products or as freeware. When possible, IKIGAI will also make available open-source code, scripts or configuration files developed within the project, and software artefacts via for example GitHub-Zenodo integration.

4.3 MAKING DATA INTEROPERABLE

4.3.1 WHAT DATA AND METADATA VOCABULARIES, STANDARDS, FORMATS OR METHODOLOGIES WILL YOU FOLLOW TO MAKE YOUR DATA INTEROPERABLE TO ALLOW DATA EXCHANGE AND

¹⁶<https://interoperable-europe.ec.europa.eu/licence/creative-commons-attribution-40-international-cc-40>

¹⁷https://intellectual-property-helpdesk.ec.europa.eu/news-events/news/open-access-obligations-horizon-europe-what-are-cc-licences-2021-11-15_en

RE-USE WITHIN AND ACROSS DISCIPLINES? WILL YOU FOLLOW COMMUNITY-ENDORSED INTEROPERABILITY BEST PRACTICES? WHICH ONES?

IKIGAI will ensure that all publicly shared data and metadata are interoperable, machine-readable, and aligned with recognized community standards, enabling re-use across logistics, physical internet and sustainability research. Open, non-proprietary or widely accepted data and metadata formats will be used whenever possible and simulation, optimization and modelling outputs will also rely on standard, widely supported formats. As described in the previous sections of this report, IKIGAI will follow community-endorsed interoperability practices such as:

- FAIR principles (Findable, Accessible, Interoperable, Reusable)
- Open Research Europe (ORE)/OpenAIRE best practices for open science workflows
- Use of persistent identifiers (DOIs) for all public outputs
- Use of standard licenses (CC BY 4.0 for publications, CC0 for metadata)

The detailed implementation of interoperability measures, including any additional community standards adopted during the project, will be refined and reported in the interim and final iterations of this DMP.

4.3.2 IN CASE IT IS UNAVOIDABLE THAT YOU USE UNCOMMON OR GENERATE PROJECT SPECIFIC ONTOLOGIES OR VOCABULARIES, WILL YOU PROVIDE MAPPINGS TO MORE COMMONLY USED ONTOLOGIES? WILL YOU OPENLY PUBLISH THE GENERATED ONTOLOGIES OR VOCABULARIES TO ALLOW REUSING, REFINING OR EXTENDING THEM?

At this stage, IKIGAI does not foresee the creation of complex or domain-specific ontologies that would require formal publication. Most terminology used across the project relies on well-established standards and commonly used vocabularies and therefore no new ontology is expected to be required. However, if during the project specific tasks or/and pilot implementation need to introduce project-specific vocabularies or terms, the IKIGAI consortium will ensure alignment with existing standards (e.g., GLEC, ISO 14083 etc.) and mapping to common ontologies. These will be then openly published as part of public deliverables or Zenodo deposited items.

4.3.3 WILL YOUR DATA INCLUDE QUALIFIED REFERENCES TO OTHER DATA (E.G. OTHER DATA FROM YOUR PROJECT, OR DATASETS FROM PREVIOUS RESEARCH)?

The IKIGAI datasets will properly cite any other relevant datasets, using the corresponding DOI (when available) or sufficient information about the other data, to enhance interoperability and potential research synergies.

4.4 INCREASE DATA RE-USE

4.4.1 HOW WILL YOU PROVIDE DOCUMENTATION NEEDED TO VALIDATE DATA ANALYSIS AND FACILITATE DATA RE-USE (E.G. README FILES WITH INFORMATION ON METHODOLOGY, CODEBOOKS, DATA CLEANING, ANALYSES, VARIABLE DEFINITIONS, UNITS OF MEASUREMENT, ETC.)?

IKIGAI will provide comprehensive documentation for every openly shared dataset to ensure transparency and facilitate data re-use. All documentation will be deposited in Zenodo or the relevant trusted institutional repository, together with the corresponding dataset. This

documentation can include README files (one per dataset), codebooks and variable definitions, scripts, notes and configuration files.

4.4.2 WILL YOUR DATA BE MADE FREELY AVAILABLE IN THE PUBLIC DOMAIN TO PERMIT THE WIDEST RE-USE POSSIBLE? WILL YOUR DATA BE LICENSED USING STANDARD REUSE LICENSES, IN LINE WITH THE OBLIGATIONS SET OUT IN THE GRANT AGREEMENT?

IKIGAI will make all non-confidential, non-personal datasets openly available in trusted repositories following the Horizon Europe's principle "as open as possible as closed as necessary". For more information see also Section 4.2.1.4 of this report.

4.4.3 WILL THE DATA PRODUCED IN THE PROJECT BE USEABLE BY THIRD PARTIES, IN PARTICULAR AFTER THE END OF THE PROJECT?

The data produced within IKIGAI that can be openly shared will remain useable, accessible and citable by third parties, well beyond the lifetime of the project, supported by Zenodo's long term preservation policy (see Section 4.2.1.11) and comprehensive dataset documentation.

4.4.4 WILL THE PROVENANCE OF THE DATA BE THOROUGHLY DOCUMENTED USING THE APPROPRIATE STANDARDS?

All datasets generated or collected within the project will be thoroughly documented using appropriate and widely recognized standards. The datasets will be accompanied by clear and traceable metadata describing their origin, collection methods, processing steps, responsible partners and version history. For further information regarding metadata use in IKIGAI please refer to Section 4.2.3.

4.4.5 DESCRIBE ALL RELEVANT DATA QUALITY ASSURANCE PROCESSES.

The IKIGAI consortium partners that own/use each dataset will be responsible for performing quality assurance checks to ensure the accuracy, consistency and reliability of all datasets and consequent research outputs (e.g. models, simulations, analyses, deliverables, scientific publications). A comprehensive quality assurance framework for project deliverables and technical outputs has been established and is detailed in D6.1 Quality Assurance and Risk Management (and will be updated throughout the project's lifetime in an interim (D6.2) and final (D6.3) iteration).

5. OTHER RESEARCH OUTPUTS

5.1 IN ADDITION TO THE MANAGEMENT OF DATA, BENEFICIARIES SHOULD ALSO CONSIDER AND PLAN FOR THE MANAGEMENT OF OTHER RESEARCH OUTPUTS THAT MAY BE GENERATED OR RE-USED THROUGHOUT THEIR PROJECTS. SUCH OUTPUTS CAN BE EITHER DIGITAL (E.G. SOFTWARE, WORKFLOWS, PROTOCOLS, MODELS, ETC.) OR PHYSICAL (E.G. NEW MATERIALS, ANTIBODIES, REAGENTS, SAMPLES, ETC.).

In addition to data management, the IKIGAI consortium will also ensure appropriate management of other research outputs generated or re-used during the project. These outputs may include digital artefacts such as software components, simulation models, analytical workflows, protocols, algorithms or documentation. No physical outputs (e.g. materials, samples, reagents) are expected to be produced within the scope of IKIGAI. All digital research outputs will be deposited in a trusted repository (e.g. Zenodo) and will follow the same procedures outlined in Chapter 4 of this deliverable report, for datasets, metadata and scientific publications. This includes assigning persistent identifiers, providing comprehensive metadata and ensuring long-term accessibility and reusability in line with the FAIR principles.

5.2 BENEFICIARIES SHOULD CONSIDER WHICH OF THE QUESTIONS PERTAINING TO FAIR DATA ABOVE, CAN APPLY TO THE MANAGEMENT OF OTHER RESEARCH OUTPUTS, AND SHOULD STRIVE TO PROVIDE SUFFICIENT DETAIL ON HOW THEIR RESEARCH OUTPUTS WILL BE MANAGED AND SHARED, OR MADE AVAILABLE FOR RE-USE, IN LINE WITH THE FAIR PRINCIPLES.

As stated in Section 5.1, the IKIGAI consortium will ensure that other research outputs will also be managed in line with the FAIR principles, as presented in Chapter 4, that will apply for the general datasets, metadata and scientific publications.

6. ALLOCATION OF RESOURCES

6.1 WHAT WILL THE COSTS BE FOR MAKING DATA OR OTHER RESEARCH OUTPUTS FAIR IN YOUR PROJECT (E.G. DIRECT AND INDIRECT COSTS RELATED TO STORAGE, ARCHIVING, RE-USE, SECURITY, ETC.)?

No additional costs have been considered regarding storage, archiving etc. of the IKIGAI research outputs. The creation and maintenance of a Zenodo community for the project is free of costs, so is the use of ORE, and all partners will use their organization's existing capacity and infrastructure, in case internal storage (for restricted datasets) is required. Any indirect costs associated with FAIR data management, such as personnel time for metadata preparation, quality checks or repository uploads are covered within the standard project management and research activities and do not require separate budget allocation.

6.2 HOW WILL THESE BE COVERED? NOTE THAT COSTS RELATED TO RESEARCH DATA/OUTPUT MANAGEMENT ARE ELIGIBLE AS PART OF THE HORIZON EUROPE GRANT (IF COMPLIANT WITH THE GRANT AGREEMENT CONDITIONS)

Not applicable.

6.3 WHO WILL BE RESPONSIBLE FOR DATA MANAGEMENT IN YOUR PROJECT?

Each WP leader is responsible for the data management within the WP and should report any issues to the project coordinator (FIT). WP5 leader, ALICE, is responsible for uploading all research output (including datasets, metadata, scientific publications and/or other research output) on Zenodo and/or ORE. A full list of at least one contact person per organization who will be the main responsible for smooth data management inside the organization (with respect to IKIGAI) and alignment with the project's data management plan will be included in D6.2: Quality Assurance & Risk Management v2.

6.4 HOW WILL LONG TERM PRESERVATION BE ENSURED? DISCUSS THE NECESSARY RESOURCES TO ACCOMPLISH THIS (COSTS AND POTENTIAL VALUE, WHO DECIDES AND HOW, WHAT DATA WILL BE KEPT AND FOR HOW LONG)?

See Section 4.2.1.11.

7. DATA SECURITY

7.1 WHAT PROVISIONS ARE OR WILL BE IN PLACE FOR DATA SECURITY (INCLUDING DATA RECOVERY AS WELL AS SECURE STORAGE/ARCHIVING AND TRANSFER OF SENSITIVE DATA)?

Article 13 of the IKIGAI Grant Agreement describes in detail the confidentiality and security principles for information sharing that should be followed by all project partners. Secure internal (within the consortium) storage of data and any research output is ensured through the project's SharePoint. Researchers will be asked to keep regular back-ups, not only on their local drives, but also on institutional drives, that ensure remote access through secure protocols.

7.2 WILL THE DATA BE SAFELY STORED IN TRUSTED REPOSITORIES FOR LONG TERM PRESERVATION AND CURATION?

As described in detail previously in this report, Zenodo is a trusted repository (see Section 4.2.1.1), ideal for long term preservation (see Section 4.2.1.11).

8. ETHICS

8.1 ARE THERE, OR COULD THERE BE, ANY ETHICS OR LEGAL ISSUES THAT CAN HAVE AN IMPACT ON DATA SHARING? THESE CAN ALSO BE DISCUSSED IN THE CONTEXT OF THE ETHICS REVIEW. IF RELEVANT, INCLUDE REFERENCES TO ETHICS DELIVERABLES AND ETHICS CHAPTER IN THE DESCRIPTION OF THE ACTION (DoA).

IKIGAI is founded on a robust ethical framework, detailed in deliverable D6.4: Ethics, Gender and Inclusivity Guide, which ensures that all project activities will be conducted in line with Article 14 – Ethics and Values of the Grant Agreement according to which the project must be carried out following the highest ethical standards and the applicable EU, international and national law on ethical principles. The key sources of EU and international law are the Charter of Fundamental

Rights of the European Union (2012/C 326/02) and the European Convention on Human Rights (ECHR) while another important source is the UN Declaration of Human Rights. The project integrates ethical values into its governance, stakeholder engagement, research, technological development and collaborative innovation processes.

The ethics self-assessment process for IKIGAI already took place during the proposal stage and its results are included in the Grant Agreement document (Sections 4.1 Ethical dimension of the objectives, methodology and likely impact and 4.2 Compliance with ethical principles and relevant legislations). A summary of this process is presented in D6.4.

One of the sections of the Ethics issues table/checklist (see D6.4) asks whether the project activities involve human participants, which will indeed occur in the case of IKIGAI, as some user groups may be invited to test the developed services e.g. as part of the Requirements Definition Surveys or Forum of stakeholders' co-creation process. IKIGAI will not work with any vulnerable categories of individuals such as patients, discriminated people or persons unable to give consent. IKIGAI also involves collecting and processing personal data in case co-creation/evaluation activities need to include them in the analysis (e.g. video/photo recording, ethnography, interviews, surveys and questionnaires). Stringent measures are established to ensure data confidentiality, anonymity, and informed consent. Data collected is treated securely, and personal data is not shared externally. Primary data collected during the project is treated with the utmost confidentiality. All processing of personal data within IKIGAI will be carried out in full compliance with the General Data Protection Regulation (GDPR) ((EU) 2016/679)).

Collected data remains within each IKIGAI Pilot (Logistic Innovation), secured on controlled servers. Anonymization techniques protect data confidentiality, and results are shared collaboratively while raw data remains confidential. IKIGAI will not collect special categories of personal data (known as 'sensitive data'). All activities within IKIGAI involving human beings will be designed in such way as to comply with the legal standards and be aligned with the key ethical values discussed in Section 3.1 of D6.4.

IKIGAI adheres to the "Do not Significant Harm" (DNSH) principle, ensuring the none of its activities cause significant harm to any of the six environmental objectives outlined in Regulation (EU) 2020/852 [22] on sustainable finance taxonomy. Continuous monitoring and evaluation will ensure compliance with EU regulations, reinforcing commitment to ethical practices and regulatory compliance. The IKIGAI Ethics and Data Protection Officer (Section 3.3 of D6.4) will oversee all activities involving human participants, data collection/processing or AI deployment, ensuring compliance with ethical requirements throughout the duration of the project.

ICCS acts as the project's Ethics and Data Protection Officer, as leader of ST6.1.4: Ethics respecting Policies and T6.3 Data Management Plan. The Ethics and Data Protection Officer identifies and manages any ethical issues that might arise and oversees all ethics-related aspects of the project. Moreover, Ethics and Data Protection Officer is responsible for making sure that all research, innovation and demonstration activities conform to Horizon Europe standards and international, EU and national legislation while respecting the key ethical principles of the project such as integrity, transparency, equality and accountability.

ICCS provides continuous guidance on all ethical matters including research with human participants, data protection, AI ethics and environmental and social responsibility and works closely with the Project Coordinator (FIT), Technical Manager (FIT), Risk Manager (FIT), Innovation and Quality Manager (INLE), Impact, Dissemination and Communication Manager (ALICE) and the Work Package Leaders, to ensure that ethical safeguards are integrated in the project workflows and decision-making processes. As the and Data Protection Officer, ICCS also coordinates the preparation of ethics-related deliverables including this Ethics, Gender and Inclusivity Guide and its updated version towards the end of the project (M40) and the interim

and final Data Management Plan (DMP) (M6, M18, M30, M42) and undertakes tasks such as designing consent forms for research experiments with guidelines considering AI ethics-by-design principles. The Ethics and Data Protection Officer ensures that all personal data processing activities remain fully compliant with GDPR throughout the project's lifecycle.

Any concern related to ethics will be reported immediately to the Project Coordinator and, where relevant, reflected in the project's Risk Register and periodic reports to the EC. The Ethics and Data Protection Officer will coordinate mitigation measures and, if considered necessary or beneficial for the project, seek external advice from ethics experts to address any major issue. To support continuous learning and training, ICCS will inform partners about existing resources they can refer to when in doubt, such as the European Group on Ethics in Science and New Technologies (EGE) and the European Network for Research Ethics and Integrity (ENERI). Each beneficiary is responsible for the ethical conduct of its staff and for ensuring that project activities undertaken by them respect the principles of integrity, transparency and accountability.

8.2 WILL INFORMED CONSENT FOR DATA SHARING AND LONG-TERM PRESERVATION BE INCLUDED IN QUESTIONNAIRES DEALING WITH PERSONAL DATA?

In case questionnaire surveys or other data collection activities involving personal data are conducted within IKIGAI, informed consent procedures will explicitly cover data sharing, re-use and long-term preservation. Consent forms and participant information sheets will be designed and the Ethics and Data Protection Officer will ensure that they are aligned with EU data protection requirements and the guidance provided in the project's Ethics, Gender and Inclusivity Guide (D6.4).

9. OTHER ISSUES

DO YOU, OR WILL YOU, MAKE USE OF OTHER NATIONAL/FUNDER/SECTORIAL/DEPARTMENTAL PROCEDURES FOR DATA MANAGEMENT? IF YES, WHICH ONES (PLEASE LIST AND BRIEFLY DESCRIBE THEM)?

A detailed list with any other national/funder/sectorial/departmental procedures for data management that is potentially followed by any of the consortium member institutions will be included in D6.7-9.

10. CONCLUSIONS

Deliverable D6.6 entails the initial Data Management Plan of IKIGAI. This DMP, developed following the Horizon Europe template, establishes the foundation for responsible and effective handling of data and other digital research outputs, throughout the project's lifecycle and beyond. It reflects the project's commitment to the FAIR data principles, ensuring that all datasets used or generated within IKIGAI will be findable, accessible, interoperable and reusable. The IKIGAI consortium, through this DMP, commits to high standards of data quality, transparency and stewardship and puts in place clear procedures for data collection, documentation, storage, access control, preservation and sharing.

This DMP is a living document that will be updated in M18, M30 and M42 of the project, to keep up with the evolution of project activities, the generation of new datasets and outputs and the emergence of any new challenges/risks related to data management. Through continuous monitoring and collaboration among partners, IKIGAI will ensure responsible data management and maximise the openness, interoperability and long-term value of its results.