Progress towards Federated Logistics through the Integration of TEN-T into A Global Trade Network

D6.3 Initial Data Management Plan

Document Summary Information

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1 According to PLANET's Quality Assurance Process

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Glossary of terms and abbreviations used

Abbreviation / Term	Description
AB	Advisory Board
AD	Adoption (refers to project risks)
CA	Consortium Agreement
CoP	Council of Partners
D	Deliverable
DMP	Data Management & Innovation Plan
DOA	Description of Action
EC	European Commission
EGTN	EU-Global T&L Networks
EU	European Union
FAIR	Findable, Accessible, Interoperable, Reusable
GA	Grant Agreement
GDPR	General Data Protection Regulation
ICT	Information and Communications Technology
IoT	Internet of Things
IPR	Intellectual Property Rights
KPI	Key Performance Indicator
LL	Living Lab
M	Month
MS	Milestone
PC	Project Coordinator
PMg	Project Manager
PO	Project Officer
PST	Project Steering Team
TEN-T	Trans-European Transport Network
T&L	Transport and Logistics
WP	Work Package

Executive Summary

The Goal of this Deliverable is (a) to document PLANET's Data Management & Innovation Plan (DMP), which establishes the procedures to ensure that data are used in compliance with applicable legal frameworks, and in particular the General Data Protection Regulation (GDPR) and (b) to define the innovation management process which takes a serious step in managing IPR, identifies innovation potential, selects the most promising project discoveries strengthening further the route to commercialisation with patent fillings. This later process will act complementarily with the implementation of PLANET's Data Management guidelines and provisioning of open data sets for research purposes.

Furthermore, PLANET's Data Management procedures will formalize a FAIR (Findable, Accessible, Interoperable, Reusable) data management framework, as per the EC directions, with the ultimate goal making data openly accessible and interoperable, and addressing data re-use considerations.

The DMP will also identify the types of data generated or collected by the project, which of them would be suitable for open access following project closure and the standards that will be used for data representation. Special emphasis has been given to address the practises enforced by PLANET for the protection of personal data in compliance with GDPR covering, including the consent forms and internal processes that PLANET plans apply. The document also outlines the key Data Management responsibilities of the Work Package Leaders, Project Management representatives from each consortium member, the Project Coordinator and the Data Owners.

Last but not least, this report analyses the Beneficiaries' responsibility and the principles set to carry out the action in compliance with the ethical principles (including the highest standards of research integrity, as described in D7.1-D7.4), and the governance rules applying in collecting, harvesting, sharing and retaining personal data to confirm that each Beneficiary, being a company, an association or a knowledge institution performing within PLANET, is always in compliance with the respective laws and regulations.

1 Introduction

This report has been prepared in the framework of WP6 and Task 6.3 of PLANET. It covers the PLANET's Innovation and Data Management procedures as well as internal General Data Protection Regulations (GDPR) compliancy policies. The report in its initial form describes the datasets that will be created, modified and utilized within PLANET and how these data relate to the project objectives and the WP structure. The procedures agreed towards Findable, Accessible, Interoperable, Reusable (FAIR) data management (as per the EC directions) have also been incorporated, with the ultimate goal making data findable including provisioning of meta data, making data openly accessible and interoperable, and addressing data re-use considerations and processes.

This report is submitted to the EC as the PLANET's Initial Data Management plan (D6.3) and will be considered as a living document that will be complemented with the actual "Data set made available'' (D6.4) delivered on month 35 and the Innovation management report and Patent Filings & Patent Office docket numbers evidencing "Patent Pending" on month 30.

1.1 Mapping PLANET Outputs

Purpose of this section is to map PLANET's Grant Agreement commitments, both within the formal Deliverable and Task description, against the project's respective outputs and work performed.

Table 1: Adherence to PLANET's GA Deliverable & Tasks Descriptions

PLANET GA Component Title	PLANET GA Component Outline	Respective Document Section(s)	Justification
DELIVERABLES			
D6.3	The deliverable consists of the initial DMP and …	Section 2 Section 3 Section 4 Section 5 Annex I: Data management report template	Section 2 relates PLANET objectives with the respective project data; Addresses the data and their sources as part of project scope. Section 3 describes the use of the TEAMWORK Server, types of data stored and access. Section 4 describes PLANET's approach of FAIR data management in accordance with the respective EC guidelines.
	Innovation management plan	Section 6	

TASKS			
ST6.3.1 Data Management procedures	This task, led by INLE with support from the all partners, will **determine how innovation and research data** will be handled during the project and describe **what data** will be collected, processed or generated, what **methodologies** and standards will be followed, whether and **how this data will be shared and/or made open**, and how it will be curated and preserved, with emphasis on ensuring **GDPR compliance**.	Section 1: Introduction Section 2: Relation of DMP to PLANET, Data Management Overview, Data Summary, DMP in WP and WP leaders and Data Management Summary per WP Section 3: The TEAMWORK Server. Section 4: FAIR data management under PLANET Sections 5: GDPR Compliance Annex I: Data management report template Annex II: Non-Disclosure Agreement	Data details and their confidentiality level are addressed in Section 3. Sections 4 and 5 report how PLANET's DMP ensures compliance with the applicable legal framework, particularly the General Data Protection Regulation
ST6.3.2 Data Management Plan	Development of the DMP, which will contain information related to the **types of data** the project will generate and collect, the **standards that will be used to represent the data** during the project and **how partners might exploit** the data resulting from the project. The DMP will **identify data sets to be made available for research purposes** by other EU projects.		
ST6.3.3 PLANET IP Protection	PLANET's IP Protection addresses management of the main IPR activities of the project and, specifically, focuses on the central assets that will be required for the project's successful implementation and commercial exploitation of the expected results. All IP produced will be systematically monitored along with the potential IPR attached to them (e.g. copyright, inventive steps, patent art), as well as verified and approved for the successful execution of the project with a strong bias/prioritisation towards incentivising and underwriting successful commercial outcomes. PLANET intends to file at least 3 patents from the project, prioritising the commercially sensitive and strategic innovation. PLANET will also conduct a global search against the prior art for potential inventions, trademarks and other IPRs where necessary and will evaluate the costs for IPR protection,	Section 6: Innovation Management Plan Annex IV: Invention Disclosure Form	

	subsequently confirming the appropriate filing regions prior to filing formal patent documents. It is anticipated that PLANET's IP filing strategy will prioritise the project's partners in a successful commercial trajectory. A cautious monitoring of the project from the IPR point of view will ensure that CDA, NDA and IPR for all partners (foreground and background) are fully respected.		

1.2   Deliverable Overview and Report Structure

This report provides the initial data management plan that PLANET will follow throughout its entire project execution and duration. The report also covers the process to be followed respecting the EC template on FAIR data management, along with the GDPR policies developed in PLANET for the protection of personal data following the related EC directive.

A summary of the sections of this report is included below:

Section 1: Report introduction and concept setting, report description and sections explanation;

Section 2: Relation of DMP to the PLANET project and how DMP affects the PLANET processes and activities; Data Summary per WP including data lifecycle, means of data collection, types of data that will be collected (sensor information, source codes etc.), formatting of the actual data, data size and growth rate predictions, data reproduction and re-usability (whenever applicable), data versioning and control to align data following data modifications, data handling software and tools to generate/modify/process; Data Management Overview per WP, data contained and details; Data management plan in the process and run-time of WP and WP leaders/consortium responsibilities;

Section 3: Description of TeamWork repository and its security aspects;

Section 4: FAIR Data Management in PLANET, following the EC template and instructions covering processes in making data findable including provisioning of meta data, making data openly accessible and interoperable, data re-use considerations and processes;

Section 5: Protection of Personal Data including IPR management and security as well as GDRP compliancy policies that PLANET will follow to comply with the EC GDPR documentation;

Section 6: Innovation Management Plan;

Section 7: Conclusions;

Section 8: References;

Annex I: Data Management Report template. The template to check PLANET data management, as well as GDPR compliancy;

Annex II: Advisory Board – Non-Disclosure Agreement;

Annex III: PLANET GDPR Policy

Annex IV: Invention Disclosure Form.

2   Data Summary

This section defines the data collection concepts and data purposes as they relate to the project's work-breakdown structure. Means of data collection, types of data that will be collected and formatting of the actual data are some of the items that are described based on WP leaders' input. Moreover, data that will be created/distributed for each of the PLANET WPs are defined and categorized in data related to the logistics operations and IoT devices, and documentation, reporting and management files.

What follows is a definition of the data that will be created/distributed for each of the PLANET WPs. These are categorized as follows:

- Data related to the logistics operations, necessary for the implementation of the Use Cases,
- Data related to IoT devices participating in the PLANET Living Labs,
- Project related documentation, reporting and management files,
- Other documents relating to the PLANET wide dissemination and exploitation (events, workshops etc.)

Data types may include narrative texts, numbers, images, audio files, video files, internal/external reports.

The structure of this section complies with the FAIR data management template of the EC[2] (DMP component 1). What follows is a data summary for each of the PLANET WPs regarding the following:

- Short description of data content and type
- Data origin/source (where the data come from)
- Data format
- Confidentiality level (Public, Project Consortium, Data Processor(s))
- Processing/Usage preconditions (restrictions)

The following section (2.2) identifies the datasets relevant to each of the PLANET WPs, the purpose of their collection and how they relate to the project objectives, as previously mentioned.

2.1   Data Lifecycle

In this section we analyze the entire data lifecycle taking place in project. The different stages at which data will be created, managed or utilized during the execution of the project and afterwards are also considered. What follows, supported by Figure 1 below, is an analysis of the data lifecycle as well as the means to control, manage and report the related data. In each of the sections that follow, specific metrics for the data management and control have been included and are later summarized into the data management report template (Annex I: Data Management Report) that will be used at various project stages to control data management compliancy. The following diagram demonstrates an indicative typical PLANET data lifecycle, without excluding the potential of alternative data flows throughout this lifecycle.

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[2] See Section 4
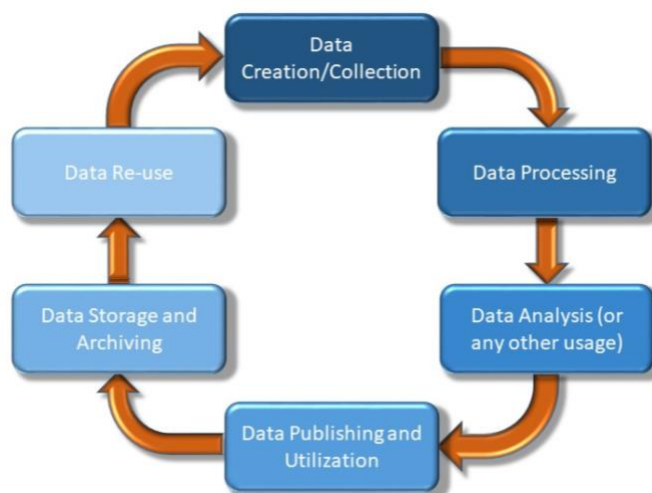
Figure 1: PLANET Data Lifecycle

2.1.1   Data Creation/Collection

As implied by the title, this stage includes the data creation and/or collection as it relates to the various data generated within the PLANET LLs as well as the project reports and other documents/spreadsheets. This includes the creation of the data by each of the respective owner and collection in a structured approach and appropriate formats and layouts to enable their processing by the other project components/modules.

Specific evaluation criteria at this stage relate to the following:

Performance Indicator	Means of verification	Target Values
Format	Compliance with existing standards of data exchange	CSV, XLS, XML etc.
Availability and Readability	Whole package of data available, non-corruption, whole percentage collected (e.g. verifiable by hash functions)	100% received 100% accessible
Fit for Use	Data follow data compliancy for proper processing and review	100% usable by intended beneficiary/ies
Consistency and Completeness	Data are consistent and complete for the intended purpose	Including 100% of information for the intended purpose
Relation	Data following a precise relation to their purpose	100% purpose precision

2.1.2   Data Processing and Analysis

This stage is related to the actual data processing by the various data processors that are actually the project partners who will have access to the data for dispensation following the project needs and outcomes. During this stage we need to ensure that the suitable partners can perform data processing in a concise approach to fulfil

the PLANET needs. This stage includes all steps towards data verification, organization, transformation, integration and extraction for the intended use. Data analysis [5] includes all the actions/methodology executed on the actual data that describe existing facts, identify outlines, develop data clarifications etc. This stage is closely related to the processing stage previously described.

Specific metrics at this stage relate to the following:

Performance Indicator	Means of verification	Target Values
Data logic	Data can be and are processed following a concise logic and approach	New and processed data follow precise data logic
Organization and Utility	Suitable content organization of data under processing	100% organized data
Validation	Ensuring that the data under processing are correct and relevant	100% validated and relevant data
Aggregation	Whenever multiple data need to be aggregated ensure that this is done in a concise approach	100% aggregate-able data
Transformation	Transformation of data to the proper format(s) for processing	Capability of data for transformation (if needed)
Calibration	Calibration of data for their intended purpose	Data properly calibrated

2.1.3 Data Publication and utilization

The Publication of data refers to the capability to share data openly to public whereas utilization includes the steps towards data sharing (internally to PLANET). This implies that the data should be medium and agent independent making sure that the transfer can be implemented in an automated or not approach. The purpose at this stage is to ensure that the data are shared with the appropriate controlling mechanisms to ensure protection of proprietary data as well as the data integrity itself [5]. This stage is closely linked with the next one (data storage and archiving) as far as metadata is related to ensure data search-ability (as another feature of the FAIR data treatment).

Specific metrics at this stage relate to the following:

Performance Indicator	Means of verification	Target Values
Means-independent	Transferring of the data in a means-independent approach	100% means independent transferability
Security (a)	Data stored in a secure server	By minimum access control provided over a TLS protocol

2.1.4 Data Storage, Archiving and Re-Use

The storage and archiving stages are also very critical as it relates to the data access, sharing, storage, archiving (including search capabilities) and re-usage. An important factor here is the updated status of the data so that no newer versions exist (unless is clearly indicated). This should also involve actions to ensure accidental data

losses, corruption and unauthorized access. Data storage and archiving is also strongly linked to data re-usability that is also within the scope of the FAIR data treatment.

Specific metrics at this stage relate to the following:

Performance Indicator	Means of verification	Target Values
Up to date	Ensuring that the stored data are up to date for the specific purpose and no later version exists	100% updated
Meta Data	Existence of meta data in stored files	Relevant metadata have been included into the archive per data set
Security (b)	Access control provided	Access control setup
Security (c)	Server is considered as safe enough (TLS connection protocol)	At least TLS connection configuration
Bandwidth	Control of server bandwidth	Effective storage server bandwidth > 2 MBPS
Expiration	Properly setting expiration dates for all data after which the data will be deleted	Expiration date noted

2.2   PLANET Data Description per WP

This section outlines the data produced or processed at each WP and elaborates a number of factors for each of the involved data objects. In each WP's Introductory subsection, it addresses the intended purpose of use of the provided data from the Data Owner's perspective and relates them with PLANET's objectives and in the table structure below it elaborates for each data element it logs the following vital information:

- Short description of data content and type
- Data origin/source (where the data come from)
- Data format
- Confidentiality level (Public, Project Consortium, Data Processor(s))
- Processing/Usage preconditions (restrictions)

2.2.1   WP1 – PLANET PI Framework (PI Business Models and Key Enablers)

WP1's goal is to provide Simulation Capability for the assessment of the expected impact of emerging trade routes, national strategies and technological concepts on the TEN-T corridors and PENs interfacing TEN-T to global trade and define the Reference Specifications of Integrated Green EU-Global networks [EGTN].

Specifically, this WP will:

a) develop an EGTN modelling and simulation capability for a comprehensive analysis of the impact of emerging trade routes, national strategies and technological concepts on trans-continental freight flows and modal split to/from Europe and on the required interfaces to the TEN-T,

b) through modelling and simulation, it will assess the expected impact of new trade routes on the TEN-T network as well as the potential impact of disadvantaged regions and their inclusion into the international trading system

c) define the impact of forthcoming international, EU and national legislative initiatives and EU policy initiatives on the development of the EGTN

d) further develop and deploy quantitative models to define how enabling ICT and T&L innovations contribute to the EGTN, assess the impact of emerging concepts & technologies on freight transport corridors and hubs and position emerging technologies as contributors to the concept of the Physical Internet, and

e) translate the results of WP1 activities into specifications for realising the EGTN.

The data that will be collected and utilized under WP 1 will come from either primary or secondary sources and will relate primarily to:

1. statistics on the intra and extra EU trade (value and volume) by mode of transport and product category,
2. freight flow statistics (transport chains),
3. Multimodal transport network operational data
4. transport industry data (such as time and cost data & specifications for systems & services),
5. existing and forthcoming legislation and policies that are expected to influence the development of the EGTN,
6. TEN-T core network corridors infrastructure data

Table 2 below attempts a first mapping of the data that will be collected and utilized/ elaborated, in the context of WP1.

The above data will be used for supporting model's development and update, thus contributing to the creation of the PLANET Simulation Capability for analyzing impacts of new trade routes and for designing a geo-economics aware and PI inspired EU global Trade Logistics Network (EGTN).

Where appropriate, documents in the form of questionnaires, user stories and diagrams from the users and other stakeholders will be collected to define requirements and specifications for the PLANET project. These documents will be stored using a project's secure file sharing service.

Finally, it is not anticipated collection or processing of personal or sensitive data in the context of WP1. If, during the course of the project, this condition is no longer valid, an explicit confirmation that the beneficiary has lawful basis for processing the respective data and the appropriate technical and organisational measures are in place to safeguard the rights of the data subjects must be provided in written to the Project Coordinator. This confirmation will be included in a follow-up update of the present Data Management Plan.

Table 2: PLANET WP1 – Data Mapping

Data Description	Data Origin/Source	Data Format	Confidentiality	Restrictions/ Preconditions
Multimodal data for transport flows within Europe – KPIS and Statistics	EUROSTAT	.zip, .xlsx	Public	N/A
Railway transport data in Europe – KPIS and Statistics	EUROSTAT	.zip, .xlsx	Public	N/A
Road transport data in Europe – KPIS and Statistics	EUROSTAT	.zip, .xlsx	Public	N/A

Data Description	Data Origin/Source	Data Format	Confidentiality	Restrictions/ Preconditions
Inland transport data in Europe – KPIS and Statistics	EUROSTAT	.zip, .xlsx	Public	N/A
Air transport data in Europe – KPIS and Statistics	EUROSTAT	.zip, .xlsx	Public	N/A
Maritime transport data in Europe – KPIS and Statistics	EUROSTAT	.zip, .xlsx	Public	N/A
PI publications and roadmap - Reports	ALICE	Docs and pdfs	Public	N/A
Statistical pocketbook 2018 - 2017 – 2016 – 2015 – 2014 – KPIS and Statistics	https://ec.europa.eu/transport/ facts-fundings/statistics/ pocketbook-2017_en	Docs and pdfs	Public	N/A
Transport flows data matrix – KPIS and Statistics	PLANET WP1 partners	Database	Project Consortium	N/A
Industry data – KPIS and Statistics	Public and private online sources such as UIRR	.zip, .xlsx, Database	Project Consortium	N/A
Requirements and specifications – Questionnaire, Checklist, Users stories	Stakeholders	.docx, .pdf	Project Consortium	N/A
Trade data (country to country)	COMEXT, processed by Eurostat	.csv	Public	N/A
Chinese trade data	Chinese customs statistics (http://43.248.49.97/indexEn)	.csv	Public	N/A
Rail network – KPI's	NEAC, WorldNet toolkit	.csv, .shp	Project Consortium	N/A
Sea network – KPI's	NEAC, WorldNet toolkit	.csv, .shp	Project Consortium	N/A
Road network – KPI's	NEAC, WorldNet toolkit	.csv, .shp	Project Consortium	N/A

Data Description	Data Origin/Source	Data Format	Confidentiality	Restrictions/ Preconditions
Eurasian rail freight statistics	Eurasian Rail Alliance Index	Web only	Public	N/A
EU regional data - Statistics	EUROSTAT	.zip, .xlsx	Public	N/A
Legislation Documents	**EU Legislation** EUR-Lex – Topics: Environment and climate change (https://eur-lex.europa.eu/summary/chapter/20.html), External trade (https://eur-lex.europa.eu/summary/chapter/07.html), Transport (https://eur-lex.europa.eu/summary/chapter/32.html) **Legislation at national level (EU & Non-EU countries)** Along the 3 emerging routes/ corridors to/from EU – will be defined	.docx, .pdf	Public	N/A
TEN-T Infrastructure Investment Projects	https://ec.europa.eu/transport/themes/infrastructure/downloads_en	.docx, .pdf, maps	Public	N/A

2.2.2 WP2 – Cloud-based PI Control and Management Platform

WP2 is intended to define the architecture and prototype the components of an open ICT infrastructure compliant with the requirements specification from T1.5, support the development of EGTN solutions in the LLs (WP3) and create a core set of open ICT technologies (specifications and prototypes) that can be taken up by T&L stakeholders, including private and public (such as customs) organizations.

In detail this work-stream will:

a) specify, design and prototype an open Cloud-based platform that will provide stakeholders with a low entry cost (open) collaboration platform for sustainable integrated multimodal freight transport, concurrently forming an open source blueprint that will enable organisations to build upon and to implement T&L design tools, collaborative logistics and new eCommerce models underpinned by Big Data driven Supply Chain insights,

b) identify, collect and integrate T&L data and models to be used in creating T&L services ensuring adherence to this Data Management Plan,

c) leverage the complex (Big) data sets that are collected from T&L processes in order to analyse them for key business insights and as a starting point for supporting new T&L business models and services under

the Physical Internet paradigm, formalizing Corridor route optimization analytics and Warehousing as a service,

d) develop Multi-user and multi-criteria models that will allow stakeholders to analyse and assess the effect of new T&L developments (e.g. new trans-continental freight routes) that cross or neighbour their regions and Intelligent PI Nodes and PI Network services to optimise the efficiency of the whole transport system whilst reducing emissions, and

e) simplify, standardise and streamline interorganizational workflows through the use of use distributed ledger technology, implementing a blockchain 'front end' available on the EGTN platform, to unify multiple back end blockchain systems and to support critical interorganizational trade workflows and

f) deliver a unified interface (HMI: Human Machine Interface) to communicate with all of PLANET's Cloud-based Open EGTN Infrastructure components, extended to support Machine to Machine interfaces and visualize analytics for easier and faster consumption and understanding by the end user.

The PLANET Platform developed in WP2 as part of T2.1, referenced in points a) and b) above will necessitate the handling of most data referenced in Table 3. The PLANET Platform will employ open source data storage technologies such as Kafka, Spark and MongoDB to manage data and facilitate further analysis. The use of these open source technologies allows the native processing of data stored in CSV, XML and JSON formats. These storage technologies are historically associated with machine learning workflows with big-data requirements. They allow machine learning models to be created and stored in the Parquet and H5 formats. The PLANET platform will provide a centralised, cloud-based way to manage the inter-continental and intra-continental EGTN.

Machine learning models will be used in the analysis described in points c) and d). The PI Corridor route optimisation and WaaS services developed in WP2 as part of T2.3 will process geo-location data for PI Packets, Nodes and Means from static sources and real-time IoT sensors (T2.2) to build maps of the PI Networks within the PI Corridor. Optimisation algorithms will consume origin and destination data points and produce optimised multi-modal and synchro-modal routes through the corridor based on criteria such as distance, time, CO^2 emissions, environmental constraints and cargo status. Optimised routes will be updated based on real-time sensor data as the PI Packets move through the PI Corridor to ensure Quality of Service (QoS). In addition to this T2.3 will produce a PI prediction service. This service will apply time series and transport model analysis to historical data for PI Packets, Nodes and Means to predict cargo volume and T&L service capacity metrics at a given time. The PI Corridor route optimisation service and PI prediction service will produce insight data that can be consumed by the Decision Support Services developed in T2.4 that will employ Multi-actor Multi-criteria Analysis (MAMCA) to assist T&L operators in managing the PI Networks. These services aim to fulfil PLANET's objective of progressing the PI paradigm for T&L and employing the use of state-of-the-art technologies in realising a seam-less EGTN.

The simplification and automation of inter-organisational workflows through the use of Blockchain Distributed Ledger technology referenced in point e) will aim to store and track PI Packets as they move through and between PI Nodes. T&L automation between PI Nodes will be appraised through the use of both different Blockchain systems and non-Blockchain systems. This initiative will use cargo, identity and transaction data provided by existing open T&L data sets or domain specific data sets provided by Living Labs.

The PLANET platform HMI and UI referenced in point f) will visualise the elements of the PI Corridor through the use of location data associated with PI Packets, Nodes and Means. This data will come from static and real-time sources provided by historical T&L information and IoT sensors. The use of open mapping data will facilitate the representation of the TEN-T and EGTN (EU-China) PI Corridors. These visualisations will provide easily consumable insights into existing flows and expose potential optimisations that could be made to geo-economic aspects of the EU's T&L connection with the rest of the world.

Finally, it is not anticipated collection or processing of personal or sensitive data in the context of WP2. If, during the course of the project, this condition is no longer valid, an explicit confirmation that the beneficiary has lawful basis for processing the respective data and the appropriate technical and organisational measures are in place

to safeguard the rights of the data subjects must be provided in written to the Project Coordinator. This confirmation will be included in a follow-up update of the present Data Management Plan.

Table 3: PLANET WP2 – Data Mapping

Data Description & Type	Data Origin/Source	Data Format	Confidentiality	Restrictions/ Preconditions
Warehouse locations/ Hubs - Location data (GPS), performance data	Open source Data UIRR Intermodal Stations database	Structured (Json, XML, csv, etc.)	Public	
Transport Logistics related	Living Labs/Demonstrator results and data outcomes	Structured (relational, XML, Json, csv)	Project consortium	
Dump of historical sensor records or Streaming API - Location, transportation equipment and product status	Living Labs Participants	Raw and structured (XML, Json, csv)	Project consortium	
Cargo location Data from IoT Devices	Living Lab and other experimental sensor infrastructure (IoT) of project partners	Structured (XML, Json, .csv,..)	Limited to the consortium	
Transport Orders – company specific data	Living Lab partners' sources	Structured Relational DB dumps, XML, Json, .csv	Project consortium	Anonymised
External open source examples	github	.c, .h, .py, .c++, Makefile, .h5, .hdfs, .parquet, .js, .ts, .swift, Dockerfile	Public	
Multimodal data (tran), Railway transport (rail), Road transport (road), Inland waterways transport (iww), Oil pipeline transport (pipe), Maritime transport (mar), Air transport (avia)	Eurostat Databases Including https://ec.europa.eu/eurostat/web/transport/ data/database European Intermodal Terminals Database http://www.intermoda	csv, json, XML, GeoJSON , GXL , public database, (Graph eXchange	Public	

	l-terminals.eu/database/ UIRR Intermodal Stations database	Language), gt file format		
Synthetic Data (elements that represent a hub including details about operations of a PI-hub and the resources involved	Generated by simulating the environment of a PI-hub and its operations	CSV, JSON, XML, GraphML	Consortium restricted, password protected, stored for the duration of the project	
Anonymized Real Data (representing real world PI-hub and its operations)	Acquired from LL partners or collected through web to train and/or validate developed algorithms	CSV, JSON, XML, GraphML	Internally held with data controller	
Transport document data	Acquired from LL partners or collected through web	PDF	Project consortium	Anonymised
T&L Identity data	Aquired from LL partners or collected through web	Blockchain DTL, DID documents	Project Consortium	Anonymised
Open map data for visualisation of PI concepts	OpenStreetMap https://www.openstreetmap.org/	JSON, XML	Public	
Last Mile Delivery modal and volume data	Acquired from LL partners	TBD	Consortium restricted	Anonymised
Warehouse inflow/outflow rates, storage capacity and storage consumption data	Acquired from LL partners	TBD	Consortium restricted	Anonymised
GS1 data from the EPCIS tracking database	Acquired from LL partners	GS1, XML	Consortium restricted	Anonymised

Shipping Container schedule and volume data	Acquired from LL partners	TBD	Consortium restricted	Anonymised
Open Transport and Logistics Data sets	Kaggle https://www.kaggle.com/search?q=transport+and+logistics	CSV, XSLX	Public	

2.2.3 WP3 – Living Labs

Purpose of WP3 is to provide both an experimentation/innovation environment and testbed for EGTN solutions along three global corridors. Each LL EGTN solution has different context and complementary business and technology focus with strong inter-LL knowledge exchange. The outputs from all three LLs will fused into a generic use case defining the introduction of the EGTN new logistics concepts & technologies as tested in the LLs and support design and evaluation of EGTN solutions by TEN-T and T&L communities.

All LLs will contribute to the strategic analysis of global flows, the analysis of corridor infrastructure issues, and the investigation of integration of the respective global corridor with the TEN-T. Furthermore, all LLs will investigate innovative ways to coordinate complex supply chains through multimodal corridors involving private and public stakeholders. A common data model will also support the 'Digital Clone' for the 3 LLs including interoperable workflows for booking, shipping instructions, port flows management, loading and discharge orders, ship and railroad transport management. Each LL will use the modelling and simulation capability / approach to design the LL solution which will be implemented utilising the PLANET Cloud-based Open EGTN Infrastructure

Finally, it is not anticipated collection or processing of personal or sensitive data in the context of WP3. If, during the course of the project, this condition is no longer valid, an explicit confirmation that the beneficiary has lawful basis for processing the respective data and the appropriate technical and organisational measures are in place to safeguard the rights of the data subjects must be provided in written to the Project Coordinator. This confirmation will be included in a follow-up update of the present Data Management Plan.

2.2.3.1 Living Lab Management

To orchestrate WP3 goals, a management structure has been established, to plan and control the respective project activities utilizing Living Labs' generated data, such as progress reports, business cases and deliverables. Those data will be driven by DoA and formalized through the ongoing evolution of the Living Labs. Although the handled data may be confidential, no personal or business-critical information or processes will be exposed as part of the project's scope.

Table 4: PLANET Living Lab Management

Data Description	Data Origin	Data Format	Confidentiality	Restrictions/ Preconditions
Living Lab results, Monitoring reports and deliverables	Living Lab Management Process	Spreadsheets (excel, csv), Documents (pdf, word)	Project Consortium	Non-personal, Business Data

2.2.3.2 Living Lab 1 – PI and Blockchain for optimised door-to-door Asia-Europe corridors - Mediterranean Corridor

LL1 will evaluate how new technologies (IoT, AI and blockchain) and concepts (Physical Internet) can improve processes, operations and efficiency along the door-to-door transport chains linking the Maritime Silk Road with EU internal corridors. LL1 is divided in to two main use cases:

- The first one with primary focus on door-to-door transport chain of containerized cargo between China and Spain evaluates how the combination of IoT (for real-time monitoring of logistics assets), AI (for better forecasts and intelligent decisions based on machine learning algorithms) and blockchain (for paperless transactions and the register of transport events) technologies, working under the umbrella of the interoperable EGTN approach, can contribute to a better management of the transport chain;
- The second one focuses on how warehouse operations exploring new IoT, AI, ML, Digital Clones, and automation technologies can contribute to the development of intelligent automated logistics nodes of the EGTN/PI network.

Both UCs support PLANET's vision, via:

1. Examining the role of new technologies in EU's strategic T&L direction with China,

2. Modelling Multimodal transfer zones using autonomous vehicles and Intelligent Modular Load Units,

3. Leveraging Technological Advancements and New Logistics Concepts and

4. Demonstrating Secure and Privacy-Preserving Logistics Data Sharing Infrastructures for Globally Interconnected Supply Chains.

Table 5: PLANET Mediterranean Corridor – Data Mapping

Data Description	Data Origin	Data Format	Confidentiality	Restrictions/ Preconditions
Open source Data for Warehouse locations/ Hubs – Map Coordinates	Public Sources	Spreadsheet, CSV, text	Public	
Demonstrators' results and data outcome – KPIs, statistics, calculated fields	Legacy Platforms, PLANET PoC	Percentages, integers, reports as docs and pdfs	Consortium Restricted	
Historical sensor records	Sensors feeds and Services	.json	Public	Anonymized
Transport Plans/ Events	PoA Rail Traffic System, BMS	APIs, .json	Consortium Restricted	Anonymized
GPS Data from Sensors	Location Sensors	Exported File, API	Consortium Restricted	
Transport Orders	Port's Legacy Systems	Exported File, API	Consortium Restricted	Anonymized

Import movements	COSCO internal system	Excel file	Data processor	Anonymized
Service schedules	COSCO internal system	Excel file	Consortium Restricted	
Depot, maritime and rail terminals data	COSCO internal system	Excel file	Consortium Restricted	
Warehouse Management System data	DHL internal system	Excel File	Consortium Restricted	Anonymized
Transport data	DHL internal system	Excel File	Consortium Restricted	Anonymized

2.2.3.3   Living Lab 2 – Synchromodal dynamic management of TEN-T & intercontinental flows promoting rail transport

LL2 focuses on dynamic and Synchromodal management of TEN-T & intercontinental flows promoting rail transport and utilising the Port of Rotterdam as the principal smart EGTN Node coordinating the rail focused transport chains linking China through Rotterdam to/from USA, and the Rhine-Alpine Corridor destinations.

This LL focuses on the role of rail freight transport connecting China and Russia with Europe including the links between the intercontinental rail lines with the TEN-T network (focus on North Sea – Baltic Corridor). An infrastructure and institutional analysis is carried out in order to identify the most prominent bottlenecks for facilitating future freight flows. Focus is on efficiency gains in intra and intercontinental flows

Moreover, the potential of Blockchain technology for augmenting volumes and quality of services on the Eurasian rail corridor will be examined by focussing on making handling on transhipment points more efficient. Potential KPIs that may assist in the development will be drafted.

In the present situation, transhipment points constitute bottlenecks for efficient handling, especially for intercontinental rail flows. The potential for better efficiency will be explored, and a blockchain based solution for achieving such synergies developed.

By means of simulation, it will be achieved a proof of concept of the blockchain based solution for efficiency gains on transhipment points. Close cooperation with HUPAC and VTG will ensure a realistic test environment for the blockchain solution. This will include the utility of dedicated KPIs.

LL2 will draw upon the results from the forecasting and simulation from task 1.2, as well as involve route, frequency and terminal information pertaining to HUPAC's and VTG's services. Also, operational information regarding transhipment point handlings will be used for developing a sound blockchain based proof of concept, including operational KPIs.

Table 6: PLANET China – Rotterdam, USA/UK/ Rhine-Alpine Corridor – Data Mapping

Data Description	Data Origin	Data Format	Confidentiality	Restrictions/ Preconditions
Task 1.2 results	PLANET project	PLANET deliverables	Consortium Restricted	

Route, frequency and terminal information HUPAC, VTG services	HUPAC, VTG, infrastructure analysis	Maps, tables	Consortium Restricted	
Operational information transshipment point handlings	HUPAC, VTG, public sources	Text	Consortium Restricted	
Operational KPIs used for services mentioned	HUPAC, VTG	Text, tables	Consortium Restricted	May require NDA / shall be kept out of public deliverables

2.2.3.4 Living Lab 3 – IoT for Silk Road Route – reliable, transparent and fully connected corridor from China to the EU

LL3 focuses on streamlining logistic processes in flows from China to Europe along the Silk Road by implementing IoT technologies (based on the EPCIS platform) and GS1 standards that facilitate transmission of data between the partners involved in the e-commerce operations. LL3 aims at standardising information flows and digitalising interactions between actors within the network (Alibaba, China Post, Polish National Post) and facilitating effective co-modal end-to end transport within EU's internal rail network.

LL3 supports PLANET's vision, by (a) assessing implications of new trade routes, the Silk Road, and how best to maximise the EU's economic prospects, (b) promoting standardization both by GS1 and also the development of European and worldwide standards, (b) simplifying customs clearance and improving logistics operations due to identification of flows of unregistered parcels from China to EU, (c) increasing automation in T&L operational management through EPCIS, and (d) applying PI principles in the development of a Polish EGTN for the e-commerce sector.

Table 7: PLANET Silk Road Route – Data Mapping

Data Description	Data Origin	Data Format	Confidentiality	Restrictions/ Preconditions
Open source Data for Warehouse locations/ Hubs – Map Coordinates	Public Sources	Spreadsheet, CSV, text	Public	
Demonstrators' results and data outcome – KPIs, statistics, calculated fields	Legacy Platforms, PLANET PoC	Percentages, integers, reports as docs and pdfs	Consortium Restricted	
Historical sensor records	Sensors feeds and Services	.json	Public	Anonymized
Location Data & Timestamp	Container Sensors	API (xml,csv)	Project Consortium	Anonymized
Data from Sensors	Location Sensors and other parameters	Exported File, API	Consortium Restricted	

Transaction data (volumen, ETA/ATA)	IT systems of project partners	Exported File, xml,csv	Consortium Restricted	
Operational data (transport orders, e-commerce orders)	Processes and procedures realised by project partners	Business process maps, reports as docs and pdfs	Consortium Restricted	

2.2.3.5   *Generic Use Case and EGTN Impact Assessment*

The Generic Use Case will integrate the results of the individual PLANET Living Labs into an overall generic use case purposed to facilitate EGTN adoption by EU T&L actors and communities and define the impact of introducing the EGTN infrastructure and the new logistics concepts & technologies that were tested in the LLs, along the TEN-T network.

A digital clone will be produced in order to explore what would be the impact of introducing the EGTN infrastructure and the new logistics concepts & technologies that were tested in the LLs, along complete TEN-T corridors.

The EGTN generic Use Case will be applied after a transferability analysis in port of Sines. It will allow the design of a 'Global Trade Zone' at this port, utilising the generic use case and Cloud-based Open EGTN ICT.

EGTN impact assessment will be done using Living Labs data in the following impact categories: (i) technical/operational; (ii) financial & business impacts; (iii) economic & social impacts.

Data requirements in this task will be a combination of the ones in the individual LLs.

2.2.4   WP4 – Steering Innovation & Building Capacity towards EGTN

WP4 will provide guidance and building capacity towards the EGTN via the development of geo-economics and technology awareness amongst all stakeholders amongst including innovation communities, logistics and transport communities, as well as policy makers.

Deliverables and other formal internal reports are some of the types of data that this WP will create and manage/control. These files will be MS office (or related) documents (i.e. .doc/.docx, .pdf etc) and will be considered as internal or external depending on their nature and character as defined in the PLANET Grant Agreement (see public, confidential, restricted reports). The formal reports and deliverables will be stored in the PLANET server (TEAMWORK™).

At this stage WP4 has not started yet and the inventory of what data will be processed in the work package is in its preliminary stage. What follows is a brief description of what inputs are required for the various tasks with a preliminary indication of the type of data involved and an indication whether data management procedures might need to be put in place.

- T4.1 will arrive at recommendations for TEN-T Interfacing to Global trade routes, informed by EGTN and TEN-T modeling and simulation, and impact assessments of the living labs. Data management requirements from those inputs will be inherited.
- T4.2 aims at briefing EGTN reports including disadvantaged regions and will take inputs from the same sources as T4.1 and from WP5. Primary data from local authorities in disadvantaged regions is a likely source of information as well, so this will require the appropriate data management procedures, such as confidential treatment of interview reports, consent of interviewees with use of interview results etc.

- T4.3 needs to assure that open source libraries are indeed available. Together with WP2, we have started to make an inventory of the status of open source software to be used in this task.
- T4.4 establishes consolidated results from outside projects, WP2 and WP3 to arrive at PI-facilitating technology roadmaps. At this moment, it seems unlikely that there will be privacy or IP related concerns in this task.
- T4.5 will arrive at recommendations for PLANET standardization. There might be IP related concerns here, and in such a case, the appropriate data management procedures will be put in place.

In general, the collection or processing of personal or sensitive data in the context of WP4 in addition to work of tasks in the PLANET project that feed into WP4 is not (yet) planned. If, during the course of the project, an explicit confirmation that the beneficiary has lawful basis for processing the respective data and the appropriate technical and organizational measures are in place to safeguard the rights of the data subjects must be provided in written to the Project Coordinator. This confirmation will be included in a follow-up update of the present Data Management Plan.

2.2.5   WP5 – Dissemination Commercialisation Policy recommendations

WP5 will ensure sustainability of project outputs from the first 4 Work Packages and lead all the activities related to dissemination, communication and outreach as well as the exploitation of the project results. WP5 will primarily develop and implement a Communication and Dissemination plan, formalize the strategies for commercializing the results of the project, with special attention to IP protection and policies recommendations and provide policy recommendations.

Additional data are expected to be created (usually in the form of unstructured information) from internal and external stakeholders open discussions (i.e. PLANET user group forum, Twitter, LinkedIn, etc.). The current information that WP5 is gathering in relation to the Advisory Board members is the following:

- name,
- email address,
- organisation and the role the AB members,
- whether the member has sent a letter of interest for the proposal,
- whether the member has filled the PLANET NDA document, presented in Annex II
- the member's expertise in relation to PLANET, and
- the responsible PLANET partner/person

The aforementioned information is considered as 'personal' information. The data are kept only for the purpose of the project (and for its duration) and only with the consent of the Advisory Board members, as this will be acquired via a clear consent statement (also included in Advisory Board NDA in Annex II below).

Table 8: PLANET WP5 – Data Mapping

Data Description	Data Origin	Data Format	Confidentiality	Restrictions
Poster, presentation, flyers	Partners and Coordinator	.tex, .doc, .docx, .pdf	NO	
Invitation letters, privacy disclosure statement and authorisation	Partners and Coordinator	.doc, .docx, .pdf	Among involved partners	

Data questionnaire	Partners	.doc, .docx, .pdf, .xls, xlsx	N/A	
Photo, images, video	Partners	.gif,.pdf, mpeg, avi	Should be requested by the involved partner	
Training documents	Partners	.doc, .docx, .pdf, .ppt	N/A	
Simulated Training labs	Partners	.pdf, .html, .png	N/A	
Source code for the web-forum	Partners	.py, .c, .cpp	Subject to IPR	
Design documents	Partners	.pdf, .html, .png	Subject to IPR	
Open discussion, Social media and discussion forum	Partners, coordinator, EC, stakeholder, other projects	unstructured	NO	

2.2.6 WP6 – Project Management

WP6, as the project management WP, is responsible for the technical and administrative coordination of the project including also the quality and ethical activities. These tasks will create and process various types of documents and files in order to ensure the efficient and effective management of PLANET. These types of data will mainly consist of documents, spreadsheets or presentation files, for managing and handling content related to meetings such as agendas, meeting minutes, presentations etc. in MS office (or similar) type of documents (.doc/.docx, .xls/.xlsx, .pdf, .ppt/.pptx etc). All partners are expected to have access to them while they will always be considered as internal documents to the PLANET consortium (not to be distributed outside PLANET). This also includes all documents and spreadsheet files for the collection and progress/periodic reporting (internally and/or to the EC) of PLANET. These will be circulated internally to the consortium or submitted as final versions to the EC and will be mainly MS office documents (.doc/.docx, .xls/.xlsx, .pdf etc). Patenting files will also be considered as internal documents so they should fall into the above category and type of data.

At the same time WP7 will be responsible to ensure compliance with the 'ethics requirements', generating four deliverables (D7.1 – D7.4): H – Requirement No. 1, PODP – Requirement No. 2, NEC - Requirement No. 3 and EPQ- Requirement No. 4, and the respective consent forms (in word format) for the participation of humans in the research, for the collection, storage, and protection of personal data and finally a declaration on compliance for collecting and processing personal data as described in the proposal.

Other files that will be created in the framework of WP6 consist of quality management and templates for all the above (and possibly more) purposes. These files will most of the time be .doc, .docx, .pdf, .xls, .xlsx, .ppt, .pptx files created by the Quality Manager and used and shared by the PLANET partners.

All related files in WP6 (Project Management), are restricted to the PLANET consortium, and will be stored in the PLANET web-space (TEAMWORK™- a GDPR compliant file sharing environment) where all partners have personalised login details and therefore, access is considered fully controlled and safe. Links for exchanging these files internally will be circulated via email or the PLANET TEAMWORK™ server itself.

Finally, it is not anticipated collection or processing of personal or sensitive data in the context of WP5. If, during the course of the project, this condition is no longer valid, an explicit confirmation that the beneficiary has lawful basis for processing the respective data and the appropriate technical and organisational measures are in place to safeguard the rights of the data subjects must be provided in written to the Project Coordinator. This confirmation will be included in a follow-up update of the present Data Management Plan.

Table 9: PLANET WP6 – Data Mapping

Data Description	Data Origin	Data Format	Confidentiality	Restrictions
Management and Financial Reports (internal and EC)	Partners and Coordinator, EC	.doc, .docx, .pdf, .xls, .xlsx	Project Consortium	
Meeting Presentations	Partners and Coordinator	.ppt, .pptx	Project Consortium, unless jointly agreed to be public	Eliminate Business sensitive or personal data prior to public exposure
Meeting minutes	Partners and Coordinator	.doc, .docx, .pdf	Project Consortium	
Deliverables and internal reports	Partners and Coordinator, EC	.doc, .docx, .pdf	Internal/Public Deliverables, Reports are internal	As per Grant Agreement
File for patents	Partners and Coordinator	.doc, .docx, .pdf	Strictly limited to Inventor Company & Inlecom until patent filling, afterwards Public	Patent preparation documents strictly limited to Inventor Company & Inlecom
Other templates (minutes, agendas etc)	Quality management templates	.doc, .docx, .pdf, .xls, .xlsx, .ppt, .pptx	Consortium Internal	

2.3 DMP in PLANET WPs and WP leaders' responsibilities and Allocation of resources

There is no particular allocation of budget resources separately foreseen for the data management in PLANET. All relevant budget resources are included in the relevant WPs that include the technical effort, management of the WP, as well as management of the related data. WP6 with Task 6.3 carries the overall responsibility for the data management lifecycle monitoring for all datasets to be collected, processed or generated by the project.

In order to ensure compliance with all the previously described data management decisions as they relate to the DMP, the following overall PLANET measures will apply:

- **WP leaders** will be responsible for adhering to the specifications above in their respective work packages.
- **The Project Manager of each organization** will be responsible for the DMP actions and will be accessible by the partner team in case of issues related to DMP.
- **Data Owners** have the ultimate responsibility of complying with the specifics of the PLANET Data Management plan, as well as the related GPDR policies.
- For the overall PLANET project activities, the **Inlecom Group has the overall responsibility for complying with the data management plan**.
- The Project Manager and the primary contact from each and every partner should ensure that personnel working on the project have read the data management plan and apply/exercise all the principles as described in the PLANET DMP (this document).

3 PLANET TEAMWORK server

3.1 Data Identification and Searching Capability

The main data sharing platform that is now fully operational in PLANET is the TEAMWORK™ web-space and management platform. This has been properly configured with a precise structure following the PLANET work break-down scheme. This server will be the main server where all project data will be shared and exchanged between the different beneficiaries. The data and document repository allow for data annotation and content setting using tags, file grouping, commenting and adding keywords as well as document versioning. These features combined with the proper data and file-naming conventions will provide an overall efficient data searching capability for PLANET directing to data itself, data owners, report owners/authors as well as data contributors. The advanced searching capabilities of TEAMWORK™ combined with the above will enable a well efficient searching capability. On top of this, the PLANET TEAMWORK™ also provides project categories, dates, activity overviews, roles and features and notifications that will also aid the data management process. To further support searching capabilities, each report owner will also include some metadata (as keywords) to the document itself for easier searching in documents and reports/deliverables etc.

3.2 Metadata provisions and Data Interoperability

As anticipated in the previous section on the data identification and searching capability, the PLANET document and data repository build the actual data model, that supports several identification mechanisms (based on key words, tags, unique identifiers etc). The owners of each data component will be responsible for using the proper naming and tagging conventions following the PLANET quality manual, so the respective metadata information can be easily kept, extracted and referenced for all purposes of data handling and utilization within PLANET.

PLANET considers metadata provisioning and searching capabilities of primal importance and will be used as the channels to enable data interoperability. In the Data Summary presented in this report as well as the summarizing table in section 2.3 (Data Management overview per WP), we have included interoperability aspects of the PLANET data as far as usage and utilization are concerned. Well agreed and proper data/file naming conventions combined with file tagging and advanced search capability will enable and maximize data interoperability inside PLANET.

Data interoperability is considered only for the internal purposes of PLANET and includes data re-use, interchanges and general utilization. For data interoperability outside the consortium, PLANET will follow IPR rules to ensure no PLANET foreground is released. More details on data sharing outside the consortium as far as IPs are related please see Section 5 of this report (Global Data Protection Policy).

As far as filename conventions are concerned to maximize data interoperability, the consortium seeks to comply with commonly used filenames such as .XML, .XLS(X) etc. Apart from the aforementioned commonly used standards (relating to commonly used filenames). If need to, PLANET will investigate the possibility to follow other (internationally recognized) standards for both actual data and software produced. Metadata standards (such as ISO 19115 (GIS data), 14721 (Open Archival Information Systems (OAIS), 16363 (audit and trustworthiness of digital repositories)). Compliance to these will support digital data management in a longer-term mentality. Other (software related) ISO standards will be also investigated (such as ISO 25010: ref systems and software engineering) and SQuaRE (systems and software quality requirements and evaluation)) [4].

3.3 Data Reusability of Existing and Non-Existing Data

Existing data in the concept of PLANET will be considered data not created by the PLANET activities. This mainly refers to the usage of logistics or sensor data from the four PLANET LLs, including data generated by the Simulation mechanism. For the purposes of PLANET, we expect a data flow of information from each of the four

LLs towards the PLANET platform during the implementation of the LLs (system demonstration and validation). The above formalize what would be considered as data produced by the PLANET LLs. In this section we refer to data that will be transferred to the PLANET services and platform including previous period operation of the LLs (i.e. historical data). These data will refer to LL operation before the installation and interfacing to the PLANET solutions and may be shared to the PLANET consortium for the cases of system experimentation and calibration. The term re-usability actually applies to data not being produced during PLANET's lifecycle, but data re-used and produced earlier by the same LL environments.

For the foreground data re-usability, the consortium will make sure that data is properly and securely stored in a convenient and secure server, if necessary, to enable easy and controlled access outside the consortium. This will be defined and planed under T4.3 ''Open Source Libraries and Transferability Framework'' and if required supported by PLANET's sharing repository (TEAMWORK™).

3.4 Security Aspects of Repository Server (TEAMWORK)

For the internal purposes of PLANET, INLECOM has configured and adapted the TEAMWORK™ server. Below we describe the server capabilities and services as far as physical, network and content security are concerned [6].

3.4.1 Physical Security

TEAMWORK™'s servers are hosted within AMAZON's Web Services (AWS) environments as world class servers and data centres making utilising AMAZON's web/application servers, file servers and databases. TEAMWORK™ spans several layers of the AWS using the Elastic Computing (EC2) for application and webservers. The file servers are connected to the AWS storage facility (S3) and the applications are connected to the Relational Database System (RDS).

Physical security is guaranteed here through increased physical security at the AWS servers supported by AMAZON's access control and extensive anti-seismic bracing as well as fire detection/protection systems, monitored on a 24x7x365 basis. Digital security resides on the AWS firewall system, SPAM and DOS protections and visibility over only trusted IPs. Multiple zone handling is achieved through the EU (Ireland, Dublin) AWS Data Center.

3.4.2 Network Security

Inside the network security aspects, we consider the server security and the data included into the server. A 256-bit secure socket layer (SSL) with the AES algorithm and 2048-bit key length are used to guarantee on a both server authentication and data encryption levels.

3.4.3 Content Security

For this aspect, full access control is managed by TEAMWORK™ ensuring the highest clearance to access the data-center while there is strictly regulated access to data. User authentication is used to provide access to the server data based on unique accounts, password protected. The project administrator is also capable of providing or restricting access to particular folders/data by setting rights and permissions.

4   FAIR Data Management

Fair data management relates to the EC guidelines [1] on the Data being Findable, Accessible, Interoperable, Reused. The structure of this section complies with the FAIR data management template of the EC (DMP component 2).

Data will be created in all PLANET WPs. Data types created, acquired and collected will include the following: Reports (internal or external to PLANET) in text, MS Word and other text files, MS XLS or other spreadsheets, MS PowerPoint files (presentations), audio files (.wav, .mp3 etc.), multimedia files (video recordings and other), specification documents (text), software application source code files, software application executable files, other observation material, survey questionnaires and data, factsheets, project images etc (see Table 2, Table 3, Table 4, Table 5, Table 6, Table 7, Table 8, Table 9).

As the following sections will reveal, we relate FAIR data management to naming conventions, contribution to open data research, data identification and searching, as well as meta-data provisions and data reusability.

4.1.1   Naming conventions for PLANET documents and data/document versioning

Within the framework of the PLANET quality plan and control, a series of documents/reports and templates has been created to ensure a consistent approach for all PLANET data and their versions. Details about these reports can be found in PLANET D6.1a (Project Management Handbook) and D6.2a (Quality Assurance Plan). For purposes of completeness we have added below some common material to indicate how the data versioning is aligned with the FAIR approach.

Table 10: PLANET – Document types and naming conventions

Document Type	Types of templates to be used
Deliverables	PLANET D-No delTITLE_v0.0_date_partner.docx
Agendas	PLANET meetingID_meetingCITY_meetingDATE_Agenda.docx
Minutes following the organisation of a physical meeting	PLANET meetingID_meetingCITY_TITLE_meetingDATE_Minutes_v0.0.docx
Minutes following the organisation of a telco	PLANET Telco ID-ShortTITLE_telcoDATE_Minutes_v0.0.docx
Presentations	PLANET MeetingID_PPTShortTITLE_meetingDATE_PARTNER.pptx

➢ **Deliverables**

PLANET D<DELIVERABLE no> <DELIVERABLE SHORT TITLE>_version_date_partner

➢ **Agendas**

PLANET < meeting ID>_<MEETING CITY>_< MEETING DATE>_Agenda

➢ **Physical Meeting Minutes**

PLANET < meeting ID>_<MEETING CITY>_<TITLE>_< MEETING DATE>_Minutes_version

> ➤ **Teleconference Minutes**

PLANET Telco <ID - SHORT TITLE> <TELCO DATE>_Minutes_version

> ➤ **Presentations**

PLANET < meeting ID>_<TITLE>_< MEETING DATE>_partner

4.1.2   Contribution to Open Data Research Pilot (data openly accessible)

This initial DMP is aligned and serves PLANET's aim to contribute data to open research. Data sets which are candidates for sharing will be checked to ensure that:

- They are not confidential; they do not include personal or commercially sensitive information.
- Permission from the relevant stakeholders and/or data subjects has been obtained.
- Sharing the data does not damage exploitation or IP protection prospects.

Accordingly, datasets will be reviewed by the *Data Owners and* have to be approved before becoming candidates for contribution to the open research. These parties and the respective technical consortium partner(s) will then agree licensing for example creative commons or public domain. Following in principle approval PLANET will then make the dataset available through the PLANET user community and upload content to the existing relevant and suitable open access repositories. Where data must be embargoed towards IP protection or exploitation a timeline for its release will be provided.

The approval of the availability of data in an open approach will need to be sent to the project coordinator from the actual data owners via email. For this, a consent that the data can be distributed outside the consortium must be included in the approval email to the project coordinator. The following information should be included:

Table 11: Data Ownerships

Data Owner	Description of data	Data filenames and version	Consent to publish data outside the PLANET consortium
Who is the data owner	*What the data include*	*Filenames and depository position*	*[YES/NO]*

5   Global Data Protection Policy (GDPR)

5.1   Introduction

As of May 2018, the General Data Protection Regulation (GDPR) has been applicable in all Member States in the European Union, as well as in the countries in the European Economic Area (EEA).

Data confidentiality is an overriding concern throughout the PLANET project and beyond, as the solution to be developed in PLANET will continue to be used afterwards, to this end PLANET aims to be fully GDPR compliant. All data to be collected from stakeholders in the project will be done in accordance with applicable ethical standards and requirements in the respective countries of the data collection, as well will be processed and handled in a secure way and in line with applicable rules and regulations on privacy and data protection. Ethics Deliverables (D7.1 – 7.4) outline how the project will be handled sensitive data, as well as presents the required ethics approvals from the countries where data was gathered.

Table 12 below presents the data and personal information that is planned to be collected and stored throughout the project duration and beyond. In addition, in Annex III the PLANET GDPR policy is described in detail.

Table 12: Data and Personal Information from day-to-day activities

Personal Data Description[3]	Access[4]	Storage[5]	Purpose[6]	Duration[7]
XLS list of PLANET AB contacts	Internal to PLANET (project partners only)	Inlecom Secure Server	PLANET mass-dissemination, list of potential users, exploitation	30/5/2023
Meeting related material (agendas, presentations, signature lists, minutes)	Internal to PLANET (project partners only)	TEAMWORK™ (folder: *meetings*)	PLANET meetings' related	30/5/2023
Workshops/Conferences and Training sessions	Internal and external to PLANET	TEAMWORK™ (folder: *meetings*), PLANET website	Large event dissemination	30/5/2023
Reporting (C forms)	Internal to PLANET (project partners only)	INLECOM server	PLANET reporting and consolidation of financial reports	5 years after the project end
Deliverables, internal documents and other PLANET reports	Depending on deliverable type could be public or consortium restricted	TEAMWORK™ (folder: *Deliverables*)	PLANET documents and deliverables	30/5/2023
Publications	Internal and external to PLANET	TEAMWORK™ (folder: *Publications*)	Dissemination and publication of research results	Internal: 30/5/2023 External:

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[3] Overall data description.

[4] Determines who has access to the particular data (internal, external to consortium).

[5] Storage places of actual data.

[6] Intended purpose of data and reasons for keeping.

[7] Duration of stored data (until when they will be kept).

				Depending on publisher
List of stakeholders (external to PLANET)	Internal and external to PLANET	TEAMWORK™ (folder: *contacts*)	PLANET mass-dissemination, list of potential users, exploitation	30/5/2023

6   Innovation Management Plan

The PLANET consortium considering the financial contribution to the project from public (EU) funding, recognizes our collective responsibility to:

- protect the Strategic IP - and keep the EC's competitive advantage "within Europe"
- help the EC improve its patent output in the EC's "strategic areas" and improve EC's competitive position on a global stage as a world leader in Innovation
- see increased success/commercialisation from EU projects, and to prioritise innovation and patent resources in ways that incite, help, support the EU SME Sector towards economic outputs
- incentivise IP filing decisions towards supporting actors who aim to commercialise the IP, thus prioritizing industry and economic impact (i.e. not to patent/protect innovation that will "sit on a shelf")
- find a responsible balance between "Open" and "Protection" - such that peers/colleagues across Europe can leverage, build on, benefit and prosper from our work (and to discourage stealth patent filings)

In support of the above, PLANET's Innovation Management Methodology will seek patent protection in strategic areas, ultimately giving freedom of use and exploitation of the inventive concepts and steps to the consortium and its commercializing actors, unimpeded by competitors outside of Europe. With formal protection at EUPO and USPTO, a patent will represent a grant of a property right to the owner of the patent, formalised in a detailed document comprising dozens of pages of background, context, specification, diagrams, and patent claims. This property right conferred is "exclusionary" and is one that excludes others from making, using, offering for sale, or importing a product that practices the invention (the term of a Patent's protection is generally 20 years from earliest filing date). Moreover, protecting PLANET's commercially strategic innovation supports the European Commission is keeping commercial and economic advantages and associated opportunities within Europe, whilst also helping to improve the EU's reputation on a worldwide stage for research excellence.

6.1   IP OWNERSHIP

In line with H2020 best practices, results shall be owned by the project partner carrying out the respective work. If any result is created jointly by at least two project partners and it is not possible to distinguish between the contribution of each of the project partners, such work will be jointly owned by the contributing project partners. In order to further the competitiveness of the EU market, and to enhance exploitation of the consortium results, each contributing party to jointly created IP shall have full freedom of action to independently exploit the jointly created results as it wishes while protecting and assuring Access Rights in accordance with the PLANET Consortium Agreement.

6.2   PATENT FILING CONTEXT

All members of the PLANET consortium will be encouraged to submit compelling innovation propositions for patent protection, in an open and unbiased competition, with the assurance that their ideas will be professionally managed, discussed and deliberated in an open and transparent way, and scored in conjunction with all of the other innovations put forward in a structured framework comprising of appropriate KPIs and measurements (discussed in next section). As previously indicated, priority of the IP resources will be aligned with intentions to exploit and intentions to commercialise, as well as protecting strategic innovation within Europe, thus giving the commercializing actors within the consortium a competitive advantage and incentive to both commercialise and exploit their innovation.

Confirmed patent filings are thus both tactically and strategically advantageous to PLANET's partners, and also help influence perceived business value of the solution and the technology, in turn raising the profile of the actors

holding the patents. In respecting EU and US patent law, the PLANET innovation management methodology recognises that inventions must meet the following criteria and will thus be interrogated from these criteria:

- be "patentable subject matter"
- meet the criteria of being "new or novel" (not invented before)
- meet the criteria of not being publicly disclosed prior to application
- have a "Useful", substantial and credible use and application
- be operative, i.e. must operate to perform the intended purpose
- be "Non-obvious" - i.e. must not be apparent to one of ordinary skill in the relevant arts
- be "Implementable" – i.e. sufficient detail needs to be provided at filing time to demonstrate that implementation of the invention is both practical and possible

Likewise, within PLANET the Patentable Concepts that will be supported and guided by the PLANET innovation framework will be in compliance with EU and US law, and thus will fall in to one of the following "legal" invention categories:

- processes, machines, manufacture, composition of matter or improvements thereof
- process: process, act, or method computer programs implementing processes and methods
- machines: "ordinary dictionary meaning" – artefacts that transmit forces, motion, energy
- manufacture: object constructed by application of a manufacturing process
- composition of matter: compounds or mixtures

The PLANET consortium comprises prominent researchers and industry experts in the fields of Transport & Logistics, Modelling & Simulation, Software Development, IT Infrastructure, Smart Contracts and Commercialisation. These individuals have successfully managed the difficult and complex journey of filing successful patents in their professional careers and have successfully brought early stage R&D to market, this experience will be brought to bear in maximising the outputs for the project.

On the basis that the PLANET project has committed to 3 patent filings at EU PO and at US PTO, the innovation management approach will involve a combination of technical, business, research and industry actors in support of a collaborative adjudication effort of project-wide decisions for prioritising the available resources. Such a heterogenous panel is deemed as an essential ingredient to ensuring fairness, best practice, best decisions, diligence and eliminating any possibility of bias in all aspects of adjudication.

6.3   IDENTIFICATION AND PRIORITISATION OF PATENTS

The innovation management process that PLANET uses for identifying, selecting and managing inventions is collaborative (involving all partners) as well as iterative (aligning to PLANET's SDLC as highlighted earlier). Inventors' inputs are collected through focused sessions, where a panel of experts from across the broader consortium will periodically work together to discern what is collectively agreed as the more strategic and commercially significant innovation.

While questionnaire-based approaches represent an option to gather ideas for inventions across the consortium, such approaches require the inventor to understand key legal subtleties such as non-obviousness, inventive step, patentability, claim sets, reduction to practice, utility, etc. Typically, researchers, engineers and managers would not have such expertise and such approaches can lead to disappointment and loss of time/productivity. Consequently, PLANET aims to follow a model where technical, business, research and IP expertise work closely together in focused innovation deep-dive meetings, in turn bringing the correct expertise together to collaboratively deliberate and decide innovations from the project that are deemed to have the more significant business, technical and research value and their respective suitability for patent protection. Appropriate checkpoints will be established during the project's lifecycle that brings this expertise together, with the end goal

of a well-formed panel of experts collectively paying attention to identifying and protecting the innovation that is deemed to be the most strategic to the project.

The innovation management scoring process works as a collaborative process that will pay attention to, at a minimum, Non-obviousness (for an invention to be non-obvious, the invention must go further than what would have been obvious to one of ordinary skill in the art when properly reviewing the relevant universe of prior art), Utility (be applicable in industry), and Novelty (invention must involve an inventive step). Scores for non-obviousness and novelty represent go or no-go decisions, while utilisation has a more subjective weighting. The no-go decision can be easily made because the obvious or not novel invention has no IP value and cannot be protected. These requirements are further substantiated as follows:

- Inventive step (Non-Obviousness) - An invention is considered to involve an inventive step if, having regard to the "state of the art", it is not obvious to a person with average knowledge of that particular technical field. It is meant that the invention must differ significantly from what is already known. This implies that new ways of combining known methods or objects are not necessarily patentable, hence the question as to whether there is an "inventive step" only arises if there is novelty. The "inventive step" requirement conveys the idea that it is not enough that the claimed invention is new (i.e. different from what exists in the state of the art), but that this difference must have two characteristics – a) it must be "inventive" and the result of a creative idea, and it must be a step that is noticeable. There must be a clearly identifiable difference between the state of the art and the claimed invention.
- Industrial Applicability (Utility) - An invention is industrially applicable or has industrial utility if it can be made or used in any kind of industry. If the invention is intended to be a product or part of a product then someone must be able to make that product. If the invention is for a process or part of a process, then it must be possible to carry out that process in practice.
- Novelty - An invention is novel if it does not form part of the state of the art i.e. the invention cannot be known. The state of the art includes any publicly available description of the invention from anywhere in the world, before the filing of a patent application, and it is known as "prior art". There must be clear that the claimed invention is novel.

In respecting the above patent legislative framework, the expertise and support available within the consortium can focus efforts and resources towards progressing those innovations which have the greatest potential for patent filling success and commercialisation.

The PLANET consortium will also leverage best practices and experience from INLECOM, who have successfully surmounted the complex steps to yield hundreds of successfully filed and granted patents in the recent years, in turn supporting the consortium in responsible recommendations, decisions and prioritization of PLANET's Innovation Management resources tasks. Focus areas for scoring and measurement of innovation are based on pre-established KPIs that collectively fall in to three categories of measurement:

- Alignment to EC priorities and objectives – thus ensuring that IP resources are managed in a way that aligned with the EC's strategic priorities and, in turn, securing IP protection in areas that are deemed both significant and important to Europe with the project's living labs as a useful and relevant calibration point
- Alignment with EU and US patent law – which includes overcoming the tests for novelty thus ensuring that filed patents meet the patent office tests for uniqueness and extending the background art in new and non-obvious ways, in turn steering a path for filed patents to be successfully granted (at issuance stage) with approval from the respective patent offices. Ease of discoverability assessments will also be performed, taking the perspective that there is limited commercial use and value in filing strategic IP in situations where it not possible to reasonably demonstrate that a third party may have infringed at some future point down the road. Ease of avoidance will also be factored in to the KPI scoring, thus applying a weighting that measures the extent to which a third party could circumvent the inventive step(s) through

an alternative or modified claim set or through implementing the inventive step in a different way and thus limiting the potential value and commercial significance of the invention.

- Commercial Value - of most significance is the application of an exploitation weighting to the inventions scored, to reduce the potential for innovation to "sit on the shelf" and not be exploited by the consortium's partners, thus incentivizing commitments to use and exploit the innovation commercially and, consequently, giving the commercializing actors a competitive advantage (as well as a valuable asset). Likewise, the background art and prior art landscape will be assessed, to understand the nature of the invention space, taking the view that well invented spaces have limited IP value potential and prioritizing IP resources in areas that will maximize he commercial value of patents granted at the patent office at issuance time. Other aspects such as IP revenue potential shall also be reflected in the scoring, allowing for the prioritisation of decisions where evidence of potential licencing, assignment and divesture values are deemed significant. Last, a final measurement in the scoring will pay attention to the innovation and its alignment with the projects broader commercial vision as expressed by the project's commercialisation plan.

The table below provides an example of the patent scoring approach.

Table 13: Patent scoring table example

Focus Areas	Innovation KPIs (applied to each idea/innovation)	Rationale/Explanation	Exemplar Scoring	Scoring from an earlier ILS Patent
(A) Alignment with EC objectives	A1 Importance/relevance to EC priorities	e.g. areas such as accessibility to interactive devices, VR Virtual reality, assistive controllers, rehabilitation, 3D scanning, additive manufacture, human-centred design	10	9
	A2 Alignment with relevance to the project Living Labs	Do we anticipate that the LL would exploit the technology now or further down the road	9	9
(B) Alignment with Patenting Fundamentals	B1 Technology strength – Degree of novelty	To what extend is the innovation new/novel	9	10
	B2 Legal strength – Degree of novelty	How easy is it to demonstrate that a 3rd party has infringed on the patent	9	7.5
	B3 Legal practicality – Avoidance (difficult to avoid vs easy to work around)	Could another actor file a patent in the same space by easily finding a different way to implement the idea (10= great difficulty, 0=very easily)	9	10
(C) Commercial Value Alignment on Business Value and Supporting Commercialisation	C1 Exploitation potential – Importance/relevance to Business and/or Customers	Is there reasonable confidence that this is important for industry/business and they men/will become potential adopters. Likelihood of invention being exploited i.e. to make sure that it does not end up sitting on the shelf	8	8
	C2	Related to how strongly invented this area is, in general, i.e. well invented areas such as email,	9	8

	UVP & Novelty Strength	collaboration, calendaring and scheduling have less strategic IP value owed to being crowded spaces (0=well invented 10=vanilla IP space)		
	C3 IP revenue potential	Potential to generate income through licencing partnerships, investment and/or divestiture in the forthcoming yeas based on market growth projections	8	10
	C4 Alignment with project's commercial vision	Is what we are protecting in line with and in support of the project's commercial ambition	9	8
Average Innovation Score: (Values 0-10, ideally achieving >8.0 in aggregate to justify EU/US Patent Filings)			*8*	*8.833*
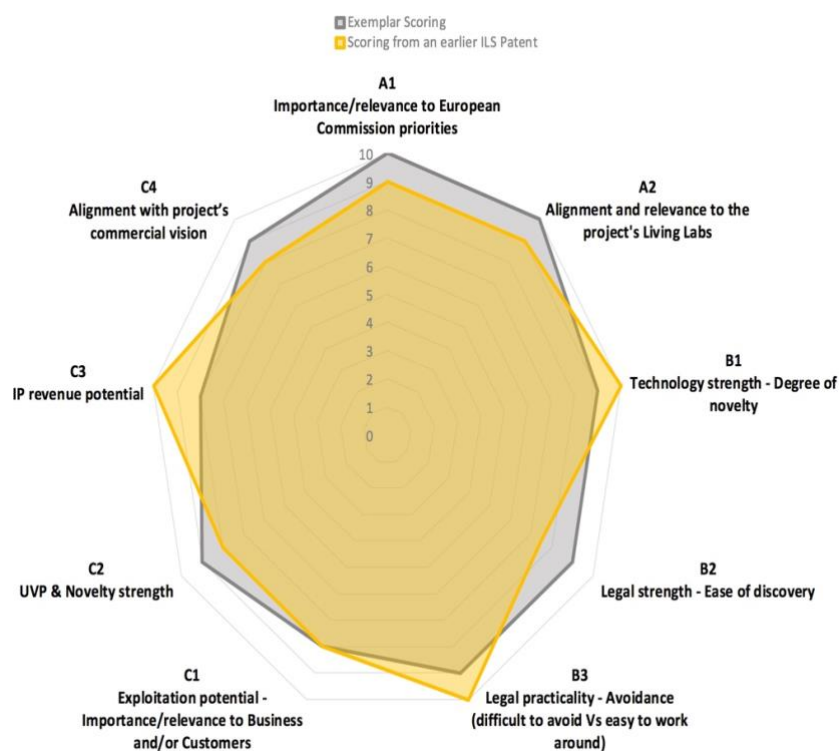
Figure 2 : Innovation Management Methodological Framework

As mentioned, identification, selection and prioritising of PLANET's inventions will be a collaborative process, managed under confidentiality guidelines, open to all actors, and involving commercial, IP, research and business experts from the consortium, guiding an organic free-flowing exchange of ideas and questions. The methodological framework allows these actors to have a naturally flowing conversation with the inventors while at the same time keeping the meeting focused on the goal of prioritising and discerning the more compelling innovations for patent protection, with discussions focused on: (1) supporting data to define the specific measure, dimension and grain of the score; (2) further questions relevant to substantiating score; (3) appropriate actions or decisions to be taken.

Frequently, to calculate a KPI score along one or more dimensions, one needs to aggregate data from a multiplicity of sources. The goal is to ensure that we have captured all attributes that create a score for the stated values and have the Innovation & Commercialisation Board validate the KPIs for each given dimension. When we use the term KPI metrics we are referring to a direct numerical measure that represents a piece of data in the relationship of one or more dimensions. An example would be: "importance to business and/or customers" from the perspective of market coverage. In this case, the measure would be euros (value) and the dimension would be territory (state). For a given measure, one may also wish to see the values across different hierarchies within a dimension. For instance, seeing value by city, region, or state would show the measured euros (value) by different hierarchies (cities, regions, and states) within the territory dimension. Making the association of a measure with a specific hierarchal level within a dimension refers to the overall grain of the metric. Looking at a measure across more than one dimension such as market value by territory (market coverage) and time is called multi-dimensional analysis.

Generally, KPI scorecards leverage multi-dimensional analysis in a limited and static way versus some of the more dynamic "slice-and-dice" tools that exist in the business intelligence market. In practical scoring terms, PLANET will use scores agreed in one or multi-dimensional analyses. More specifically, PLANET's KPIs represent a metric tied to a target with a stated KPI representing how far a metric is above or below of such pre-determined target. Scorecards in this context can be used to help align operational execution with innovation strategy with the goal of keeping the innovation focused on a common strategic plan. The primary measurement used will hence be scored KPI value indicators. These indicators will represent a composite of several metrics (Figure 2) that measure the innovation ability against a strategic objective. An example of such a metric would be an indicator named "importance to customers/others" that combines quantitative/ weighted measure such as new customer acquisition with qualitative measure such as customer satisfaction with value proposition (quantitively measurable with e.g. number of repeated products purchasing when applicable). By aligning KPIs and scoring with the PLANET business plan we are also able to help validate the importance of the score and separate the "must-have" from the "nice-to-have" inventions, thus prioritising commercial relevance.

The PLANET consortium will apply best practice in IP value creation to discern a small number of targeted patent assets, applying a spider diagram of KPI weighting, aiming for high quality and high value patents. Some of the best practices from the WIPO Patent Drafting Manual can be used in terms of pertinent questions related to invention disclosure being put forward, in turn paying attention to some of the key questions asked therein (see Annex IV).

The methodology aims to see performance metrics that prioritise strong patents aligned with PLANET's project's goals with IP management guided as a knowledge management process involving many expert stakeholders that collectively comprise a common body of critical information and knowledge that is needed to discern the more strategic and commercially strategic innovation that aligns with the EC's brief, the objectives of the project and which incentivises the commercial ambitions of the project. This work will be done in close alignment with PLANET's commercialisation work, where the innovation management methodology and associated decisions will be guided by and informed by progress in the respective tasks.

6.4   PLANET PATENT FILING PROCESS

The PLANET project has an ambition to file minimum 3 patents which necessitates the identification and appointment of a lawyer for the work in the project. In line with the EC's public procurement guidelines and associated best practices, INLECOM will obtain a minimum of three quotes from Europe and USA patent attorneys.

In line with the PLANET Patent Filing process (abstracted in Figure 3 : Patent Filing Process) the consortium will review the quotes obtained. The Patent Filing process is a well-known, predetermined process that starts with Non-provisional Patent Application after which a PCT requests (Patent Cooperation Treaty) assists applicants in seeking patent protection internationally and enables the patent Office to assist with their patent granting

decisions, in turn facilitating public access to a wealth of technical information relating to those inventions. By filing one international patent application under the PCT, applicants can simultaneously seek protection for an invention in a very large number of countries. The PCT is an international treaty with more than 145 Contracting States.

Consequently INLECOM, in support of the consortium, will follow the "best value for money principle", obtaining quotes from several Patent Lawyers. Decisions in respect of outside council will also be made based on best price-quality ratios that take into account a competitive price and a legal experts' ability to demonstrate a positive issuance rate (patent grant rate) in accordance to Article 10 of the Grant Agreement.
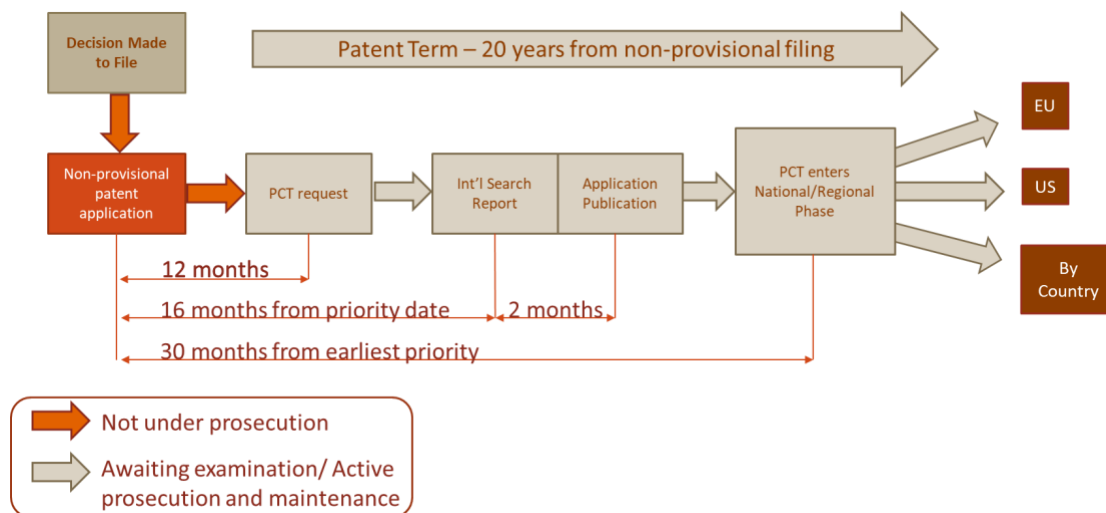
Figure 3 : Patent Filing Process

6.5 IPR and PATENT TRAINING FOR PLANET CONSORTIUM

The initial IPR training session and workshop will be held the first quarter of 2021, with two key aims: firstly, to create a solid foundation in the basic concepts of IPR protection and secondly, to clarify the PLANET partners' current business ambitions and the relationship between each partner commercial vision and PLANET. In this first session partners with commercial interests will present their current business ambitions in relation to PLANET.

The following table represents a preliminary schedule for IPR and Patent training activities.

Table 14: IPR and Patent training activity schedule

Activity	Provisional time schedule
IPR training session for consortium partners	Q1 2021 (Inlecom)
Innovation template walk through	Q1 2021 (Inlecom)
IPR committee review and scoring procedure walk through	Q2 2021 (Inlecom)
2nd Business planning and commercialisation workshop	Q2 2021 (Inlecom)

7   Conclusions

This document is the first release of the PLANET's Data Management Plan (DMP) and describes in detail the data and the way they will be managed in the context of the PLANET project. It includes a detailed overview of the data that will be created, processed or utilized within the PLANET scope with details on the type and nature of the data involved in each of the PLANET WPs, as well as their relationship with the project objectives. A structured approach has also been established and documented to ensure that PLANET's data management will be following the FAIR data principles as defined by the EC.

A full section of this report has been dedicated to address the protection of personal data in compliance with GDPR (regulation) that has been designed to harmonize data privacy laws across Europe, and protect and empower all EU citizens' data privacy, reshaping the way organizations across the region approach data privacy [3]. This section also covers all practices that PLANET will follow to comply with the above, along with consent forms and internal processes that PLANET plans to enforce and apply. The final section of the document presents the Innovation Management plan of the project, giving emphasis on the patent identification strategy that will be followed as well as a detailed description of the patent filing process.

8   References

[1] EC H2020 Programme, Guidelines on FAIR Data Management in Horizon 2020, Version 3.0.

[2] PLANET GA No 860274.

[3] EU GDPR Website, GDPR portal: https://www.eugdpr.org/.

[4] Data Management Lifecycle and Software Lifecycle Management in the Context of Conducting Science, W. C. Lenhardt, S. Ahalt, B. Blanton, L. Christopherson, R. Idaszak, Journal of open research software.

[5] Data Lifecycle Overview, USGS Data Management.

[6] TEAMWORK security overview report.

Annex I: Data Management Report

Performance Indicator	Means of verification	Target Values	Compliancy
Data Creation			
Format	Compliance with existing standards of data exchange	XLS, XML etc	√ or ×
Availability and Readability	Whole package of data available, non-corruption, whole percentage collected	100% received 100% accessible	√ or ×
Fit For Use	Data follow data compliancy for proper processing and review	100% usable by intended beneficiary/ies	√ or ×
Consistency and Completeness	Data are consistent and complete for the intended purpose	Including 100% of information for the intended purpose	√ or ×
Relation	Data follow a precise relation to their purpose	100% purpose precision	√ or ×
Data Processing and Analysis			
Data logic	Data can be and are processed following a concise logic and approach	New and processed data follow precise data logic	√ or ×
Organization and Utility	Suitable content organization of data under processing	100& organized data	√ or ×
Validation	Ensuring that the data under processing are correct and relevant	100% validated and relevant data	√ or ×
Aggregation	Whenever multiple data need to be aggregated ensure that this is done in a concise approach	100& aggregate-able data	√ or ×
Transformation	Transformation of data to the proper format(s) for processing	Capability of data for transformation (if needed)	√ or ×
Calibration	Calibration of data for their intended purpose	Data properly calibrated	√ or ×
Data Publication and Utilization			
Means-independent	Transferring of the data in a means-independent approach	100% means independent transferability	√ or ×
Security (a)	Data stored in a secure enough server	At least access control provided over a TLS protocol	√ or ×
Data Storage, Archiving and Re-Use			
Up to date	Ensuring that the stored data are up to date for the specific purpose and no later version exists	100% updated	√ or ×

Meta Data	Existence of meta data in stored files	Relevant metadata have been included into the archive per data set	√ or ×
Security (b)	Access control provided	Access control setup	√ or ×
Security (c)	Server is considered as safe enough (TLS connection protocol)	At least TLS connection configuration	√ or ×
Bandwidth	Control of server bandwidth	Effective storage server bandwidth > 2 MBPS	√ or ×
Expiration	Properly setting expiration dates for all data after which the data will be deleted	Expiration date noted	√ or ×

GDPR Compliancy[8]	Data Subjects Details				Overall Compliancy
Personal Data Description[9]	Access[10]	Storage[11]	Purpose[12]	Duration[13]	Check
e.g. conference programme	*Internal and external*	*PLANET document server, PLANET website*	*Dissemination of PLANET conference*	*PLANET finish date*	*[Y/N]*

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[8] To be completed for each type of data falls under GDPR or is connected to it in any way.

[9] Overall data description.

[10] Determines who has access to the particular data (internal, external to consortium).

[11] Storage places of actual data.

[12] Intended purpose of data and reasons for keeping.

[13] Duration of stored data (until when they will be kept).

Annex II: Advisory Board – Non-Disclosure Agreement

PI and Blockchain Applied in the integration of TEN-T into a Global Trade Logistics Network (PLANET)

Non-Disclosure Agreement for Advisory Board Members

This Non-Disclosure Agreement ("NDA"), is made as of *29/09/2020* hereinafter referred to as "Effective date", and is entered into by and between the following parties (each a "Party and collectively the "Parties"):

(1)   INLECOM GROUP (INLE), established in SQUARE DE MEEUS 38, BRUXELLES 1050, Belgium, VAT number: BE0663658954, represented for the purposes of signing the Agreement by Panayotis KATSOULAKOS.

(2)   <Advisory Board member details>.

-AND-

The other Parties above are hereinafter each referred to as a "Advisory Board Party" and collectively as the "Advisory Board Parties".

WHEREAS, the Project Coordinator of project "PLANET" (PI and Blockchain Applied in the integration of TEN-T into a Global Trade Logistics Network) funded by the European Union's Horizon 2020 research and innovation programme under the Grant Agreement No 860274 has entered into a consortium agreement (the "Consortium Agreement"), with effective date October 2020, regarding PLANET.

The Advisory Board Parties are members of an advisory committee (the "Advisory Board"), connected to PLANET, but are not necessarily partners in PLANET (in which case not parties to the Consortium Agreement). The Advisory Board Parties will not commit any financial resources to this project but will contribute expertise as identified in the stages of the project, subject to availability and a voluntary approach. Therefore, the Advisory Board Parties will not receive any direct costs, however travel and accommodation costs related to PLANET events and/or meetings, will be reimbursed by providing the respective receipts to the coordinator (INLECOM).

WHEREAS, the Project Coordinator, for the mutual benefit, anticipate the need to disclose to and receive from each other information regarding PLANET, which the disclosing Party considers to be proprietary and which relates to the Advisory Board Parties' participation in the Advisory Board (hereinafter referred to as the "Project").

The Parties are aware that the Consortium Parties' undertakings towards each other regarding confidentiality and non-disclosure are governed by the Consortium Agreement and consequently not by this NDA.

NOW, THEREFORE, in consideration of the covenants and agreements herein contained, the sufficiency and adequacy of which are acknowledged, the Parties agree as follows:

1.   "Information" as used in this Non-Disclosure Agreement (NDA) is any information disclosed by a Consortium Party to an Advisory Board Party related to the Project or by an Advisory Board Party to a Consortium Party related to the Project. A Consortium Party or an Advisory Board Party who discloses Information pursuant to the first sentence of this Article 1 is hereinafter referred to as a "Disclosing Party". An Advisory Board Party or a Consortium Party who receives Information pursuant to the first sentence of this Article 1 is hereinafter referred to as a "Receiving Party".

2.   All information in a tangible form (including information transmitted electronically) which the Disclosing Party desires the Receiving Party to treat as "Confidential Information", shall be marked by the Disclosing Party with the legend "CONFIDENTIAL" or "PROPRIETARY" in order to identify its confidential nature. If Confidential Information is disclosed orally, visually or in any other non-tangible manner of disclosure, such information shall also be entitled to protection as Confidential Information, if the information disclosed is identified as Confidential Information at the time of disclosure and is subsequently reduced to appropriate written form and furnished to the Receiving Party within one (1) month of the time of original disclosure.

3.   Each Party hereto agrees to receive Information from the other Party for the sole purpose of evaluating the progress and research results of PLANET.

4.   For the term of the confidentiality obligation provided for in this NDA, the Receiving Party agrees to hold the Confidential Information received from the Disclosing Party in confidence and not to disclose such Confidential Information to any other Party or party and to use such Confidential Information only for specified purposes in this NDA. The Receiving Party agrees that it will use the same degree of precaution and safeguards as it uses to protect its own information of like importance, but in no case with any less than reasonable care. For the avoidance of doubt, the Receiving Party also agrees that it will not use Confidential Information to develop or produce any product or to develop or perform any service without an agreement in writing with the Disclosing Party authorizing such development, production or performance.

5.   The obligation of confidentiality shall not apply to:

   (i)   Information, which is now or later becomes publicly available through no act or failure to act on the part of the Receiving Party in violation of this NDA; or

   (ii)   Information, which the Receiving Party can prove is rightfully acquired by the Receiving Party from a third party which is not under any obligation of confidentiality with respect to the Information; or

   (iii) Information, which the Receiving Party can prove is developed by or for the Receiving Party independently of information which the Receiving Party is required to keep confidential under this NDA; or

   (iv)   Information, which is required to be disclosed by national law or any court having jurisdiction over the Receiving Party; or

   (v)   Information, which the Receiving Party can show it possessed before the Disclosing Party disclosed it to the Receiving Party

6.   The Receiving Party may disclose Confidential Information to its employees who need to know and use Confidential Information in furtherance of the purposes of this NDA and who are under an obligation to keep the Confidential Information confidential to the same extent as the Receiving Party.

7.   The Receiving Party will return Confidential Information to the Disclosing Party upon written request by the Disclosing Party. However, the Receiving Party will be allowed to retain one (1) archival copy of any document if required by national law.

8.   The Agreement shall cover Confidential Information disclosed by the Disclosing Party to the Receiving Party for the purpose of this NDA. Termination of obligations of confidentiality and non- use shall not be construed, however, as a grant of any license under patent rights or copyrights of the Disclosing Party, any other Party or party.

9.   Nothing contained in this NDA shall obligate any Party to enter into any agreement with any other Party for the purpose of any development project or for any other purpose. Also, this NDA does not include, expressly or by implication, any representations or warranties as to the accuracy, efficacy, completeness, capabilities, safety or any other qualities whatsoever of any Information or materials provided under this NDA, nor does this NDA grant the Receiving Party any license on the Information of the Disclosing Party.

10.   This NDA shall be construed in accordance with and governed by the laws of Belgium. All disputes arising out of or in connection with this NDA, which cannot be solved amicably, shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with said Rules. The place of arbitration shall be Brussels, if not otherwise agreed by the conflicting Parties. The arbitration will be final and binding upon the Parties.

Nothing in this NDA shall limit the Parties' right to seek injunctive relief or to enforce an arbitration award in any applicable competent court of law.

11.   This NDA can be amended or modified only by an amendment in writing signed by all Parties. Parties foresee to enlarge the number of Advisory Board Parties and agree to amend this NDA for accession upon request.

12.   This NDA constitutes the entire agreement and sole understanding of the Parties with respect to the subject matter hereof, save for the Consortium Parties' undertakings towards each other regarding confidentiality and non-disclosure which are, as stated above, governed by the Consortium Agreement and not by this NDA.

13.   An entity becomes a Party to this NDA upon signature of this NDA. This NDA shall have effect from the Effective Date and will expire upon complete fulfilment of PLANET. The secrecy obligations last until five (5) years after the expiration of this NDA. Provisions and/or obligations which naturally are intended to continue to exist after the expiration of this NDA, survive such expiration.

14.   The Information is provided 'as is' without any kind of warranty, express, implied and/or statutory, including but not limited to the fact that the application and/or use of the Information does not infringe the intellectual property rights and/or other rights of a third party. The Parties are liable towards each other only for damages, which are the direct result of a culpable shortcoming namely a breach of contract, on the part of the breaching Party under this NDA. The Parties are not liable to each other for any kind of

other damages, losses, expenses, indirect and/or consequential damages, which the Receiving Party suffers, arising out of and/or in connection with the accuracy, completeness and/or other quality issue with respect to, and/or the application and/or use by the Receiving Party of the Information.

15.   The Receiving Party acknowledges and agrees that all property, including intellectual property, in the Information shall remain and be vested in the Disclosing Party.

16.   By signing this NDA, the Receiving Party consents to PLANET consortium keeping their personal data (name, email and affiliation) and photos (taken during project events) for the purposes of the PLANET advisory board and only. All parties reserve the right to be removed (opt-out) from the project repository, at any point via direct contact to the project coordinator, in full compliance with the EU GRPR policy.

IN WITNESS WHEREOF, the Parties have accepted the terms and conditions of this NDA and caused it to be duly signed by the undersigned authorized representatives in separate signature pages.

Company name: INLECOM	**Company name:**
Signature(s):	**Signature(s):**
Name(s): Gerasimos Kouloumbis	**Name(s):**
Title(s): PLANET Project Manager	**Title(s):**
Date:	**Date:**

Annex III: PLANET GDPR Policy

This Global Data Protection Policy (the "**Policy**") is drafted by Inlecom (the "**Project Coordinator**") with regard to the EU H2020 Project PLANET Contract Number 860274 (the "**Project**") executed by the list of partners included therein (the "**Project Partners**") in order to:

- Comply with the policy and legal requirements of the EU General Data Protection Regulation (Regulation EU 2016/679, the "**GDPR**"), as in effect since 06 June 2020;
- Comply with all other applicable national and EU regulations and guidelines on personal data processing;
- Comply with applicable regulations and best practices with regard to research projects within the EU H2020 Research Programme;
- Raise awareness and improve knowledge among the Project Coordinator, the Project Partners, as well as their employees and/or agents and/or contractors (collectively, the "**Policy Recipients**").

Because the field of data protection is a dynamic legal field of constant change, new developments, in the form of new regulations, official reports and/or guidelines, are issued by EU and national legislators, as well as, competent national authorities at a constant pace. In this context, this Policy may need to be periodically updated by the Project Coordinator, in order to remain relevant to legislative change. Accordingly, Policy Recipients will be duly informed, and will be asked to provide their renewed consent upon any such updates.

While every effort has been undertaken by the Company to compile a comprehensive, accurate, relevant and lawful Policy, it is expressly clarified that this Policy does not constitute legal advice neither does it warrant compliance to any applicable laws or regulations. This Policy makes no warranties, express or other, on lawfulness, completeness, fitness for a purpose, or merchantability. Recipients and addressees of this Policy are advised to engage legal counsel prior to applying this Policy for their own aims and purposes.

8.1 Definitions

For the purposes of this Policy the GDPR definitions, as set in Article 4 of the GDPR, apply. In addition,

"**Personal data**" means any information relating to an identified or identifiable natural person that is processed by any Project Partner and Policy Recipient during execution of the Project.

"**Controller**" means the owner of the data (usually the creator of the data itself), unless otherwise expressly clarified in this Policy or elsewhere in Project deliverables and/or reports.

"**Processor**" means each Project Partner, unless otherwise expressly clarified in this Policy or elsewhere in Project deliverables and/or reports.

"**Consent**" of the data subject means any freely given, specific, informed, unambiguous and **in writing** indication of the data subject's wishes by which he or she, by a statement or by a clear affirmative action, signifies agreement to the processing of personal data relating to him or her.

"**Supervisory authority**" means the competent Data Protection Authorities within the Project Partners' jurisdictions.

Aim of the above definitions is to particularise and complement the definitions of Article 4 of the GDPR. Policy Recipients are advised to consult both texts in order to formulate the applicable definitions each time.

8.2   Policy scope

The Controller determines in advance what is the law applicable to the processing of personal data in a particular case, considering that according to EU law such determination comes from legal principles and cannot be derogated by the parties.

8.2.1   Establishment

Each Project Partner is established on the territory of EU Member States. In the event of any change in establishment, the respective Project Partner shall notify the Project Coordinator duly and in writing.

Unless otherwise expressly specified, each Project Partner is considered the controller in that Member State.

8.2.2   Processor outside the EU

In the event of any subcontracting to an organization not established on EU territory (such as subsidiaries pertaining to the same corporate group) that processes personal data of people staying on EU territory, on behalf of a Project Partner, that organization qualifies as Processor and ensures the fulfilment of the obligations imposed by the GDPR for that specific part of processing.

8.3   Personal data processing

8.3.1   Personal data

Personal data means any information relating to natural persons, that is or can be identified, even indirectly, by reference to any other information including a personal identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person.

8.3.1.1   Special categories of data

Special categories of personal data include data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, trade union membership, data concerning health or data concerning a natural person's sex life or sexual orientation as well as the processing of genetic data and biometric data for the purpose of uniquely identifying an individual.

In the event of such processing the Controller and/or Processor respectively comply with specific rules related to the processing of such data of special categories, as collecting specific informed consent from data subject and applying stricter safeguards.

When the Controller and/or Processor relies on data subject's consent as a legal ground for processing special categories of data, it will meet all legal consent requirements; otherwise, they are only processed if and to the extent it is based on one of the legal grounds listed in the GDPR for the processing of such data.

8.3.1.2   Data anonymisation

Whenever possible, including non-detrimental to Project execution purposes, Controller and Project Partners shall undertake efforts to keep personal data processed by them for Project purposes anonymous or pseudonymous.

According to the GDPR, "*anonymous information*" is information which does not relate to an identified or identifiable natural person, or personal data rendered anonymous in such a manner that the data subject is not or no longer identifiable. In this context, the GDPR does not apply to the processing of such anonymous information, including for statistical or research purposes.

Similarly, "*pseudonymisation*" means the processing of personal data in such a manner that the personal data can no longer be attributed to a specific data subject without the use of additional information, provided that

such additional information is kept separately and is subject to technical and organisational measures to ensure that the personal data are not attributed to an identified or identifiable natural person.

8.3.1.3   Newsletters, social media and other dissemination material

Unless otherwise expressly specified in Project contract, the Controller shall be responsible for the personal data processing carried out for Project dissemination purposes. To this end, the Controller shall:

- Collect and keep all relevant personal data (including lists of contact details), or copies thereof;
- Monitor relevant communications;
- Address to Project Partners instructions and guidelines on Project dissemination activities (including any EU or other state guidelines, whenever available);
- Inform Project Partners of any policy or legal requirements reviews and changes.

8.3.2   Data subjects

8.3.2.1   Minors

Processing of children's personal data requires a special legitimate basis. In the event of such processing the Controller shall be informed in advance and in writing by Project Partners.

8.3.3   Data processing

Data processing means any operation, or set of operations, carried out with or without the help of electronic or automated means, concerning the collection, recording, organization, keeping, interrogation, elaboration, modification, selection, retrieval, comparison, utilization, interconnection, blocking, communication, dissemination, erasure and destruction of data whether the latter are contained or not in data bank.

8.3.4   Principles for legitimate processing

European Union data protection law set forth the following specific principles which have to be complied with for the processing to be legitimate.

Pertinence and necessity - The Controller should implement management practices to fulfil the obligation to collect only relevant and necessary data for a specified purpose.

Purpose limitation - Personal data is collected for specified, explicit and legitimate purposes and not further processed in a way incompatible with those purposes. The Controller has a clear overview of all purposes for which personal data is processed. Personal data is not processed for purposes besides the original purposes, unless the (secondary) use is compatible.

Data minimization - Personal data collected by the Controller must be adequate, relevant and limited to what is necessary in relation to the purposes for which they are collected and further processed; if the same purposes can be realized in a less data intensive way a preference is given to that method.

Data update - Personal data is accurate, and, where necessary, kept up to date. Every reasonable step is taken to ensure that personal data that are inaccurate, having regard to the purposes for which they are processed, are erased or rectified without delay.

Data retention - Personal data is kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the personal data are processed. The Controller and/or Processing concerned should have processes and policies in place to:

1) determine what the applicable (minimum and maximum) retention periods are for the personal data that is being processed;
2) ensure that relevant retention periods are monitored.

8.4 Data protection legal roles and responsibilities

In response to GDPR requirements specific security measures have been implemented in terms of assignment the data protection roles and allocation of data protection legal obligations. As stated in the project GA a Data Protection Officer (DPO) has been appointed and the contact details of the DPO made available to all data subjects involved in the research. Moreover, it has been agreed to consider the whole consortium a "host institution". It is not foreseen to assign of individual DPOs per partner but whenever required a Data Protection Officer ("DPO") may be designated for assistance in monitoring internal compliance with GDPR.

With regard to the actors involved in personal data processing, the consortium was able to identify the following roles:

8.4.1 Controller

By determining the purposes and means of the processing of personal data, unless otherwise expressly specified in this Policy, the Controller is considered by law as the "Controller" and it is the primary target of the provisions of the law.

Data controller determines the purposes and means of the processing of personal data, its key responsibility is to ensure that data collection and processing within the scope of PLANET, will be carried out in accordance with EU and national legislation.

Lukasiewicz-ILiM, as Quality and Ethics responsible partner, has been appointed as Data Controller.

Whenever required, following applicable GDPR and Member State respective legal requirements, the Controller may designate a data protection officer ("DPO") for assistance in monitoring compliance with GDPR.

Lukasiewicz-ILiM, having the role of Quality and Ethics Manager, has appointed internally a Data Protection Officer (DPO). DPO can be reached at office@ilim.lukasiewicz.gov.pl. Data privacy policy at Lukasiewicz-ILiM can be found at https://www.ilim.poznan.pl/rodo

8.4.1.1 Identification

The data controller previously identifies itself as such and ensures an effective implementation of data protection measures in order to comply with the principle that personal data are processed fairly and lawfully. The legal role of controller implies specific responsibilities because provisions setting conditions for lawful processing are essentially addressed to the controller.

8.4.1.2 Accountability

The GDPR provides full accountability of the company/controller regarding the compliance of its processing of personal data with the law. To ensure the effectiveness of that obligation, it prompts the Controller to follow an overall approach, achieving a genuine system of control and management of its pertinent information. So, accountability and compliance system are elements of the framework for the protection of personal data, in the cause/effect relationship: to be compliant and able to prove it (accountability), the Controller needs to put in place a comprehensive compliance system.

8.4.1.3 Data protection by design

The Controller considers data protection issues from the outset and from the design of the Project, within the whole lifecycle of processing, in order to manage the issues in a proactive way, to reduce costs and improve efficiency.

8.4.1.4 Data protection by default

The Controller standardizes data protection principles in personal data processing, products and services. The measures adopted ensure that

- Personal data is processed for purposes not different from the original purposes;
- Only data necessary for these purposes are collected;
- Data are not disclosed without human intervention.

8.4.2 Joint controller

In the event that at any time during Project execution the Controller processes personal data in conjunction with a third party, by jointly determining the purposes and means of the processing, they both act as joint controller. Both joint controllers determine the mutual responsibilities with a specific arrangement.

8.4.3 Processor

Unless otherwise specified expressly in this Policy, all PLANET partners handling personal data are considered as Data Processors, meaning that they process personal data under the control and guidance by the Data Controller.

A processor processes personal data on behalf of the Controller – that is, the Controller delegates all or part of the processing activities to them. In such event the Project contract assumes the role of the relevant required written agreement as per GDPR requirements.

The processor warrants that it shall provide sufficient guarantees to ensure compliance with the GDPR, has implemented appropriate controls to meet data protection requirements defined by the agreement, instructions and/or legal requirements and ensures the protection of the rights of data subjects.

8.4.3.1 Auditing

The Controller ensures the commitment of the Processor(s) to enable and contribute to any review activities, including inspections, carried out by the Controller or other (EU authorities') auditors and/or reviewers, as appropriate.

8.4.3.2 Security

Each Project Partner undertakes that it adopts appropriate security measures to ensure the security, integrity and confidentiality of personal information and electronic communications at an adequate level with regard to Project purposes, and at any event at no lower lever than processing of similar data within its own organisation.

8.4.4 DPO

Whenever required, following applicable GDPR and Member State respective legal requirements, the Controller and each Processor, may designate a Data Protection Officer ("DPO") for assistance in monitoring internal compliance with GDPR.

Lukasiewicz-ILiM, as Quality and Ethics responsible partner, has appointed internally a Data Protection Officer (DPO). DPO can be reached at office@ilim.lukasiewicz.gov.pl. Data privacy policy at Lukasiewicz-ILiM can be found at https://www.ilim.poznan.pl/rodo

8.4.4.1 Identification

Each Processor appoints a DPO in accordance with the criteria and the requirements set forth in the GDPR, as applicable to it. In such event, it shall notify the Controller in writing accordingly.

8.4.4.2 Designation compulsory vs. voluntary

Each Processor documents the reasons supporting the designation of the DPO or, rather, the reasons why such designation is deemed not necessary. This documentation forms part of the data protection documentation system of that Processor.

8.4.4.3   Professional requirements

The DPO has sufficient authority, professional qualities and independence to ensure success in his role, according to the GDPR provisions.

8.4.4.4   Tasks

The organization assigns to the DPO at least the tasks listed in the GDPR.

8.4.4.5   Notification to Supervisory Authority

Whenever a DPO is appointed the organization notifies the Supervisory Authority of such designation and publishes DPO's contact details.

8.4.5   People in charge of processing

Individuals who process personal data under the authority of the Controllers or Processor(s) must receive specific formal instructions. Hence, the Controller gives specific instructions, relating also to the implementation of security measures and safeguards, to all of its personnel in charge of processing personal data.

8.4.5.1   Training and awareness

All Project Partners' employees should be well informed and aware of data protection implications and be able to carry out their obligations in their work. A data protection education and communication program should be in place and supported by a monitoring system that confirms all employees and/or contractors are appropriately trained on their data protection responsibilities.

8.4.5.2   Policies and procedures

Data protection policies and procedures exist, are documented in writing, are formally approved by management, implemented, reviewed, updated and approved when there are changes to applicable laws and regulations.

All Project Partners understand, and the Controller may ask them to overview all their personal data processing, the data protection risks and the applicable rules and procedures. In such event, they shall provide it with all requested information to the best of their ability without undue delay.

8.5   Notice and consent

8.5.1   Notice

Each Controller and/or Processor, as appropriate, provides the information required by law to the data subject in a concise, transparent, intelligible and easily accessible form, using clear and plain language, in particular for any information addressed specifically to a child.

The data protection notice informs data subjects about the processing of personal data relating to them, even when the personal data is not collected from them as well as of their rights, in order to let them verify in particular the accuracy of the data and the lawfulness of the processing.

8.5.2   Free and informed consent

Personal data is processed if and to the extent that the data subject has given valid consent to the processing for one or more specific purposes, or another legal basis for processing exists.

Systems or applications are able to document the explicit consent of the data subject so that it can be evidenced at any time.

Other legal grounds for a legitimate personal data processing are the following:

1. performance of a contract;

2. legal obligation;
3. vital interest of data subject;
4. public interest;
5. legitimate interest of the controller or third party.

If "legitimate interest" is used as a basis, the interests that have preceded to the decision, need to be documented as well as any possible mitigating measures which will be taken to be able to proceed with personal data processing based on the defined interests.

8.5.3 Withdrawal of consent

Data subject's consent can be withdrawn at any time; even though it will not affect the lawfulness of processing based on consent before its withdrawal.

8.6 Rights of data subjects

The individual whom the data refers to (data subject) is entitled with specific rights set forth by the law. The GDPR requires that each Controller and/or Processor, as appropriate, must facilitate the exercise of the data subject's rights, take action on the request within a specific time frame and must communicate the information requested in an intelligible and easy to access form.

- **Right of access**

    Any individual must be able to exercise the right of access to data relating to him which are being processed.

- **Right to rectification**

    Each Controller and/or Processor, as appropriate, should have a procedure in place for data subjects to request rectification of their personal data. The procedure specifies in which cases rectification is legitimate. If a data subject's request for rectification is legitimate, this is executed across all relevant data storage facilities, including those managed by third parties.

- **Right to erasure**

    Each Controller and/or Processor, as appropriate, should have a procedure in place for data subjects to request erasure of their personal data. The procedure specifies in which cases erasure is legitimate. If a data subject's request for erasure is legitimate, this is executed across all relevant data storage facilities, including those managed by third parties.

- **Right to restriction of processing**

    Each Controller and/or Processor, as appropriate, should have a procedure in place for data subjects to request restriction of processing of their personal data. The procedure specifies in which cases restriction is legitimate. If a data subject's request for restriction of processing is legitimate, this is executed across all relevant data storage facilities, including those managed by third parties.

- **Right to data portability**

    Each Controller and/or Processor, as appropriate, determines which processes are subject to the right of data portability as well as when the requirements for such right are met.Data subject can request the organization to receive a machine-readable copy of the personal data the organization holds about them and where possible, enable the transfer of this data to another data controller.

    Portability right can be exercised when:

1. Processing operations are based on data subject's consent or on contract;
2. Personal data concerns the data subject and are the same that the latter has provided to the organization;
3. The right does not adversely affect rights and freedoms of others;
4. The processing is carried out by automated means.

Each Controller and/or Processor, as appropriate, implements appropriate measures and procedures to provide data subject, who is entitled to, with a structured, commonly used and machine-readable copy of the personal data it holds about him and where possible, to enable the transfer of this data to another data controller indicated by data subject.

- **Right to object**

    Where personal data are processed for scientific or historical research purposes or statistical purposes, the data subjects have the right to object on grounds relating to their particular situation (unless the processing is necessary for the performance of a task carried out for reasons of public interest). The right to object is explicitly brought to the attention of the data subject at the latest at the time of the first communication with the data subject, presented clearly and separately from any other information. Measures should be in place to assess such objections and to ensure that such processing ceases when the request is legitimate and needs to be respected.

Data subjects have right to object, on request and free of charge, to the processing of personal data relating to them for purposes of direct marketing.

- **Automated decision making**

    Data subject has the right to object to any automatic decision-making (including profiling).

    Each Controller and/or Processor, as appropriate, will have determined which processes entail automated decision-making (including profiling) and will have established measures to allow data subjects to object to such automated decision making and profiling. Suitable measures are in place to safeguard the data subject's rights and freedoms and legitimate interest, at least the right to obtain human intervention on the part of the Company/controller, to express his or her point of view and to contest the decision.

- **Timely response to exercise of rights**

    Each Controller and/or Processor, as appropriate, must confirm to data subjects without delay whether data relating to them are processed and communicate the data to them in an intelligible form. Each Controller and/or Processor, as appropriate, should implement internal procedures in order to be able to provide a timely response to the requests of data subject for the exercise of his rights.

    Measures have to be implemented in a way that effectively allows an individual to exercise his or her right to personal data, and that enables Each Controller and/or Processor, as appropriate, to respond to such request appropriately within the required timeframes.

8.6.1.1   Notification to recipients

In case of a legitimate exercise of rights to rectification, erasure or restriction of processing recipients of the personal data should be informed of the rectification, erasure of that data or of the restriction of processing.

Each Controller and/or Processor, as appropriate, should have a procedure in place for communicating any rectification or erasure of personal data or restriction of processing to the recipients to whom the personal data has been disclosed and for disclosing these recipients to the data subject, if so requested.

8.7 Data protection documentation system

8.7.1 Register of processing

Each Controller and/or Processor, as appropriate, with regard to their processing activities must set up a relevant record, maintained in writing (including in electronic form) and made available easily and swiftly to the supervisory authority on request, as per applicable legal requirements within their respective Member States. The record of processing activities shall contain all the information required by GDPR.

Consequently, the Controller shall have an up-to-date overview of all personal data processing activities and shall maintain records within the Project, that meet the legal requirements posed by the GDPR. By so doing, the Controller will be able to demonstrate compliance to any Supervisory Authority or other state or EU authority concerned.

For the avoidance of doubt, each Project Partner carries the same responsibility above within its own respective organisation.

8.7.2 Register of data breaches

A specific register where the breaches have to be recorded together with other information specified by the law, must be maintained by the Controller and shown to the Supervisory Authority upon request. This register is an important element of the data protection documentation system.

Project Partners need to notify immediately and in writing the Controller of any personal data breach within their respective organisations that affects execution of the Project in any way, and to cooperate with the Controller while applying relevant GDPR legal requirements.

8.8 Data protection assessment

8.8.1 Assessment

In the event that a Data Protection Impact Assessment ("**DPIA**") is carried out under the Project, the Controller shall ensure that personal data receives the appropriate level of protection in accordance with the assessed data protection risk.

The decision whether to carry out a DPIA under the Project, unless undertaken in respective Project contract, will be made by the Controller upon prior written consultation with the Project Partners.

8.8.1.1 Adequacy of protection

The Controller, assisted by Project Partners, should have a process in place in order to assess for all processing the risks of varying likelihood and severity for the rights and freedoms of natural persons, taking into account the nature, scope, context and purposes of personal data processing.

8.8.1.2 Impact assessment in case of high risk (DPIA)

When the preliminary assessment highlights that processing represents high risks, a formal and documented DPIA is carried out by ascertaining possible impact on data subject.

DPIA is conducted in such a way to meet all the requirements set forth by the GDPR (art. 35) in order to confirm the quality and validity of the findings.

8.8.1.3 Prior consultation to Supervisory Authority

The Controller has a process in place and roles are assigned in order to ensure that when a DPIA determines that the processing represents high risks, the competent Supervisory Authority is consulted prior to the processing.

8.9   Technical and organizational measures

The Controller and each Project Partner, as appropriate, adopts appropriate technical and organisational measures with regard to Project execution (the "**Measures**"), and reviews and updates them where necessary, to ensure and to be able to demonstrate that processing is in compliance with GDPR.

Each Project Partner shall notify relevant Measures to the Controller in writing. In the event of any queries or further requests by the Controller, each Project Partner undertakes to address them duly and in writing.

In the event that any Project Partner has notified the Measures to its competent Supervisory Authority, it shall inform the Controller thereof, and shall provide respective copies thereof.

8.10   Data breach

According to GDPR, the Controller and/or Processor, as appropriate, has to implement adequate Measures in order to prevent personal data breaches.

In addition, the Measures should be able to minimize the adverse effects, in case a security breach to personal data relating in any manner to the Project occurs anyhow.

Should a data breach occur, GDPR sets forth that the Controller and/or Processor, as appropriate, has to notify it to the Supervisory Authority providing specific information, without undue delay and in any case no later than 72 hours from the time of knowledge.

When the breach leads to significant risk of serious adverse effects on the data subject(s) or serious adverse consequences for the protection of personal data, also the latter must be informed without undue delay.

8.11   Data transfers to third countries

No international transfers of personal data are expected to take place under the Project.

In the event that any Project Partner wishes to carry out such personal data processing, it shall notify the Controller in writing and in advance. Unless otherwise expressly specified, any international data transfers carried out by any Project Partner for any reason during Project execution take place at its own exclusive liability and responsibility; same Project Partner shall hold all other Project Partners (including the Controller) harmless from any legal or other claims arising for such personal data processing.

8.12   Sanctions and damages

In case of violation of data protection principles and rules, each Project Partner (including the Controller) is responsible for damages and is subject to sanctions. Possible violations may involve civil liability and sanctions in order to ensure that any relevant damage is compensated.

The Project Partner (including the Controller) that is liable for said damages and/or sanctions shall hold all other Project Partners harmless from any claims, costs, and expenses arising from relevant GDPR infringement.

8.13   PLANET Web-server Personal Data Protection and Privacy policy

The following Personal Data Protection and Privacy Policy should be uploaded onto the Project Document Server (TEAMWORK™):

1. Introduction. This Personal Data Protection and Privacy Policy (the "**Policy**") aims at providing details of the processing, and related methods of use, of personal data referred to users/visitors (the "**User(s)**") of this website that can be reached at the address [teamwork.com] (the "**Website**").

This Policy refers to EU Project [PLANET, 860274], (the "**Project**").

Web users and visitors are recommended to read carefully this Privacy Policy before sending any personal information and/or filling in any electronic form posted on this website.

This information is given in accordance with applicable EU data protection law, in particular the EU General Data Protection Regulation, and EU applicable Privacy law.

2. Controller. The Controller is the actual data owner per data set. In particular, each PLANET partner introducing, transferring or creating data for the needs of the project is expected to assume full ownership and responsibility of the respective data.

3. Scope. This Policy covers this web site only, and no other personal data processing under the Project or any other websites owned or run in any manner by the Controller or Project Partners.

4. Policy and information notice. This site has been designed with the main function of providing information on the activities of the Project. Therefore, in most cases, the collection of the user's personal data is not required.

In certain instances, such as the "newsletter" section and in order to allow the transmission of our newsletter, the interested user is required to fill out a data collection form. In these cases, the user is always free to provide his/her own data and consent to relevant processing. We recommend reading this Policy before providing the data.

In addition, should it be necessary in limited cases to collect personal information for other purposes, this will be clearly shown in the information privacy notices required by law, in order to enable transparency and user awareness. Consent forms and other documentation will be used each time, as appropriate.

The above information aims to define limits and methods of personal data processing of each service, according to which the visitor can freely express his consent and eventually allow the collection of data and its subsequent use.

5. Traffic data. The computer systems and software procedures used to operate this website acquire, during their normal operation, some personal data whose transmission is implicit in the use of Internet communication protocols.

This category of data includes: IP addresses, browser type, operating system, the domain name and website addresses from which you are logged in or out, the information on pages visited by users within the site, the time of access, time period of user's staying on a single page, the internal path analysis and other parameters regarding the user's operating system and computer environment.

This technical / IT data is collected and used only in an aggregated and not immediately identifiable manner; they could be used to ascertain responsibility in case of hypothetical crimes against the site or upon public authorities' request.

6. Cookies. No cookies are used by this website.

7. Redirects to other websites. From this website, you can connect through special links to other websites of Project Partners within the Project, or of third parties as applicable each time. Controller hereby assumes no responsibility regarding the possible processing of personal data by third-party sites and in respect of the management of authentication credentials provided by third parties.

8. Purposes of processing and data retention. The processing of personal data is carried out mainly by using electronic procedures and media for the time strictly necessary to achieve the purposes for which the data were collected. The User, however, has the right to obtain the cancellation of his data for legitimate reasons.

9. Optional supply of personal information. The supply of personal data required from the User, unless otherwise noted, is optional, but in case of refusal it could be impossible to fulfill the request, or the related activity mentioned.

10. Place of personal data processing. Data processing related to web services of this website takes place, unless otherwise expressly stated, at Controller's establishment, which provides for the corresponding server management. Personal data are only handled by technical personnel of the Controller, specifically in charge of processing, or others charged with occasional maintenance operations. These persons have received specific instructions on the confidentiality of this data.

11. Scope of data flow and dissemination. The data may be used by Controller and/or Project Partners' employees, as persons in charge of processing, to whom appropriate operating instructions have been given, as well as by third parties who perform operating activities on behalf of them and who act as data processors, in order to fulfill contractual obligations with regard to the Project. Personal data are not disseminated to unspecified recipients. Detailed information on the names of the data processors can be requested by writing to the project coordinator.

12. Data protection rights. With regard to the processing of personal data, User has the right, at any time, to obtain confirmation of whether or not the data exists and to have it communicated to him/her in an intelligible format. Users also have the right to know the content and the origin of the data, to check its accuracy or to ask that it be integrated, updated or adjusted. Finally, Users have the right to ask that the data be deleted or made anonymous or to request the blocking of data processed in violation of the law; moreover, they may oppose the processing of the data for legitimate reasons. Requests should be addressed to the project coordinator.

13. Policy updating. The possible entry into force of new laws, as well as the evolution and updating of User services or developments in the Project could make it necessary to vary the method of processing of personal data. It is therefore possible that our policy may be modified over time and therefore we invite the visitor to periodically visit this page. To this end, the policy document highlights the date of last version.

8.14 PLANET Day-to-Day Data Usage and Related Processes

Despite the fact that PLANET does not use any direct personal data (in the form of data coming out or processed during its research activities), it recognises the needs for creating some process related policies so that there is overall agreement of the usage/storage/retention/opt-out etc. of data from every-day (day-to-day) project activities. A list of such matters is included below where the means that the consortium will tackle them reflects the whole consortium agreed approach.

8.14.1 PLANET list of Project Advisory Board Contacts

The PLANET list of Project Advisory Board (AB) contacts relates to an excel sheet that includes the names of all the AB Members and User Group contact persons and their email address. It also indicates their expertise (justifying the purpose of contacting each of them) along with the organisation they belong. Only the coordinator and WP5 consortium partners have access to this list of contacts. The purpose of this list is to keep a well organised list of Project AB contacts for the PLANET communications. The data will be erased after the project end (30/5/2023) and not kept or maintained after the project end. This list is being stored at the PLANET TEAMWORK™ document server. Any person has the right to opt out of this list by direct email to the project coordinator.

8.14.2 Meetings' related material

This relates to any document created and used for the purposes of project meetings. These may relate to agendas, presentations, minutes, signature lists or any other internal document created for the purposes of PLANET meetings. All these documents will be created and maintained for internal purposes of PLANET and only PLANET partners will have access to them at the PLANET TEAMWORK™ under the meetings section. They will be kept for 5 years after the project end (for auditing reasons, i.e. 30/5/2028). Any person has the right to opt out of being mentioned in these by direct email to the project coordinator before or after the meeting.

8.14.3 Workshops/Conferences and Training sessions

These data relate to the creation of workshops, agendas, programmes, participants' lists etc and in general dissemination material related to PLANET organised workshops. Regarding the external publication of this material, we consider that this material can be fully anonymized so that it excludes personal information from the presenters/participants in the related programmes/agendas that will be shared publicly. For the parts of the related material that will be used for the workshop organisation internally to PLANET, the related files will be stored in the PLANET TEAMWORK™ server under the section meetings. The data will be kept for 5 years after the project end for auditing reasons (i.e. 30/5/2028). Any person has the right to opt out of being mentioned in these by direct email to the project coordinator before or after the event.

8.14.4 Reporting

Reporting refers to internal and external (EC) documents including PLANET progress of activities, technical overviews etc. Related files will be including documents (reports with no personal identifiable information) and financial data (C forms) sometimes including personal data. The purpose of these data is financial so that partners can claim budget requests for their related effort in PLANET. C forms will be maintained by the project coordinator only and stored at internal and secure server. These (per partner) data are not to be shared with anyone internally or externally to PLANET, will be kept for 5 years after the project end (for audit purposes, i.e. 28/2/2026) and will be deleted after this date. Opting out of these data will be possible but will require an updated Form C to be submitted by the project partner.

8.14.5 Deliverables, internal documents and other PLANET reports

During the PLANET project run-time, a large series of documentation and reporting will be provided relating to the project deliverables and/or internal documents etc. These files will be used for the project contractual obligations and shared to: PLANET partners, EC, everyone (depending on deliverable type). In these documents, the name of authors will be included. Following this, as far as the internal (to PLANET) and EC distributed documents are related, they will be used only for the purposes of reporting and stored in the PLANET TEAMWORK™ under the deliverables section. Reports that will be shared publicly (public deliverables) will mention only the partner name and not any other personal information. All reports will be kept for 5 years after the project end for auditing reasons (i.e. 30/5/2028).

8.14.6 Source codes

As far as the inclusion of personal information inside source codes is concerned, PLANET intends to not use any such information into actual source code files produced in the framework of PLANET foreground. In case that any partner wishes to include any personal information, a related consent form will have to be created, used and signed by the data owner(s).

8.14.7 Usage of cookies (in PLANET sites)

In the cases that in a PLANET application (web) the usage of cookies is needed, a related pop-up window informing the user must be present, prompting the user to accept (or not) the conditions under which her/his personal information are stored. PLANET will maximize efforts to reduce the usage of cookies in its web developments.

8.14.8 Lists of stakeholders and PLANET contacts

This list refers to internal to PLANET lists of external stakeholders including potential technology/results up-takers, major links with end-users and other stakeholders. This list will be used for communication purposes of PLANET, no external access will be allowed (restricted to PLANET partners) and will be stored in the PLANET TEAMWORK™ (contacts section). When people are being registered to this list, a consent by email will have to be sent by the data owner. The data will be kept until the PLANET end, i.e. 30/5/2023. Any person has the right to opt out of being mentioned in these by direct email to the project coordinator.

8.14.9 Project related research data (data from living labs)

Any data circulated internally to PLANET for research purposes (i.e. data from living labs for source code analysis, sensor data for analytics etc.) must be fully anonymized by the data owner (in this case the data controller) and not relating in any case to personal information as stated in the sections above.

8.14.10 Any other PLANET related data

In case that personal information needs to be added in any other document in PLANET, the controller (document creator) will have to notify the data owners of their personal details being included into the related document, purpose, retention, storage etc.

8.14.11 Summary of data that fall under GDPR special treatment

The table below provides a summary of the day-to-day data including personal information and their access, storage, purpose and retention details.

Annex IV: Invention Disclosure Form

(from WIPO Patent Drafting Manual) – Page 1 of 3

Confidential
Disclosure No.: _____
Status: _____

INVENTION DISCLOSURE FORM

Name: _____

Work phone number: _____

Fax number: _____

1. **PROPOSED TITLE:**

   _____

2. **FIELD OF INVENTION**

   This invention relates primarily to:

   _____
   _____

3. **BACKGROUND AND RELATED ART**

   A. The technical problem addressed by the invention is as follows:

      _____
      _____

   B. The closest related art is described as follows:

      _____
      _____

   C. Advantages presented by the invention are as follows:

      _____
      _____

4. **DRAWING(S)**

   Drawings for this invention are available/not available. If available, please attach.

   Comments about drawings provided:

   _____
   _____

5. **WRITTEN DESCRIPTION**

   The invention is described as follows:

   _____
   _____

NOTE 1: Please attach additional pages as necessary.
NOTE 2: If you have other documents and/or drawings related to the invention, please attach copies to this form.

Invention Disclosure Form (from WIPO Patent Drafting Manual) – Page 2 of 3

6. **CONCEPTION OF INVENTION**

Date of conception: _____

Date of first written description: _____

7. **REDUCTION TO PRACTICE**

Has the invention been reduced to practice (does it work)? _____

COMMENTS, if any, on conception of invention and/or first written description:

_____

_____

8. **INVENTOR(S) (this section <u>must</u> be completed)**

INVENTOR 1: _____

Name: _____

Residence Address: _____

Citizenship: _____

INVENTOR 2: _____

Name: _____

Residence Address: _____

Citizenship: _____

COMMENTS on inventors or inventorship (please note if any of the inventors resides out of the country).

_____

_____

9. **DATES OR PRODUCT TESTING AND RELEASE**

Alpha Testing: _____

Beta Testing: _____

General release or sale: _____

Offers for sale: _____

COMMENTS on product testing and release:

_____

_____

10. **DISCLOSURE OF INVENTION**

Has there been any disclosure or use of the invention by the public? When and to whom? Under a non-disclosure agreement?

_____

_____

Please attach a copy of the disclosure.

Invention Disclosure Form (from WIPO Patent Drafting Manual) – Page 3 of 3

11. INTERNAL DISCLOSURE(S)

First internal disclosure date:

Name of first person to whom invention was disclosed:

COMMENTS about first internal disclosure:

12. ARTICLE(S)

Have any articles been published?

DETAILS about publication of articles(s):

Please attach a copy of any published article(s).

13. ADVERTISEMENTS, PRESS RELEASES AND PRODUCT ANNOUNCEMENTS

Any advertisements, press releases or product announcements?

DETAILS about any advertisements, press releases and product announcements:

Please attach copies of any advertisements, press releases and/or product announcements.

14. OUTSIDE DISCLOSURE(S)

Have there been any disclosures outside the company?

Were all outside disclosures under a non-disclosure agreement?

DETAILS about any disclosures outside the company:

Please attach copies of any information disclosed.

15. TRADE SHOWS AND CONFERENCES

Are there any upcoming trade shows or conferences?

DETAILS about upcoming trade shows and/or conferences:

ADDITIONAL COMMENTS BY INVENTOR:

Signed: Witnessed and Understood by:

Date: Date: