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The purpose of this deliverable D5.2 is to summarise the observations and recommendations of the Advisory Board members on the project as a whole or specific elements thereof. This version of the Deliverable focusses on three key topics developed under PLANET, namely the Stakeholder analysis, the PLANET vision and EGTN, and the modelling and simulation capabilities. These topics were selected to confirm the starting point of PLANET and the envisaged vision and direction PLANET intended to go to.

To obtain these objectives, the overall vision of PLANET was introduced and the structure of the project was explained. Next, the background of all Advisory Board members was looked at. This information has been structured in a way to identify the key topics of interest, the experience and education of the Advisory Board members so that their selection could be confirmed to provide guidance for all topics PLANET is working on. Details of this analysis are shown in chapter 3.

The PLANET work package topics were then mapped against the background knowledge of the Advisory Board members on a high level. This mapping showed that the Advisory Board can advise the PLANET team and PST in all areas of knowledge PLANET is covering. This mapping is shown in chapter 4 of this report.

The available and relevant contents of PLANET which served as a basis for the observations and recommendations of the Advisory Board has been analysed in more detail. Three key clusters, each of which bringing together different deliverables, have been identified for this first version of the Advisory Board recommendations:

- Stakeholder analysis
- PLANET vision and EGTN
- Modelling and simulation

The key deliverables for each of these clusters were summarised in more details and key questions for each topic were selected for further discussion with the Advisory Board members. Details of this background information are summarised in chapter 5 and Annex 2, respectively.

All activities around the Advisory Board have been described in order to better understand how the observations and recommendations were brought together. This comprises the setup of the board, communications with, the meetings held, and the Terms of Reference of the Advisory Board (for details see chapter 6).

Following this background information, observations and recommendations of the Advisory Board were collated from various sources like meetings, interviews, and e-mails and were discussed in chapter 7, clustered around the aforementioned principal topics. Each of the recommendations were discussed and responded to by members of the PLANET consortium.

Overall, the meetings and discussions with the Advisory Board members has shown that the advice of external experts to the project is extremely useful and can trigger very helpful discussions to stimulate more practice-based and relevant solutions for the project.

It is envisaged that the second version of this deliverable (D5.3) will include relevant comments to further outputs of PLANET and will therefore provide a sound basis for the further use of all PLANET deliverables, tools, and models.

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The vision of PLANET is to advance the European Commission's strategy for Smart, Green and Integrated Transport and Logistics by efficiently interconnecting infrastructure (TEN-T, Rail-Freight Corridors) with geopolitical developments, as well as to optimise the use of current & emerging transport modes and technological solutions. The realization of this vision is what PLANET calls the **Integrated Green EU-Global T&L Networks (EGTN)**.

The PLANET Advisory Board (AB) is a vital instrument for collecting project guidance and direction from IT, operational and business models related to global trade logistics networks. The Advisory Board will offer impartial scientific advice and guidance based on real business conditions of the logistics sector, support the Project Steering Team (PST) and advise the consortium on social, environmental, technological, legal and economic factors that may influence the innovation management of PLANET.

The Advisory Board comprises a group of external advisors representing research and business interests, drawn from across the world and embracing a range of knowledge of the project's focus areas.

This document seeks to provide an overview of all activities around the Advisory Board of PLANET, including the background the Advisory Board members and a mapping of this background against the contents of PLANET, following the work package structure of PLANET. It will also review, cluster, and filter the relevant available information from PLANET which serves as a basis for the observations and recommendations of the Advisory Board with the key intention to confirm PLANET's starting point and vision and/or to provide guidance on potential improvements. The Deliverable also summarises the key activities around and communications with the Advisory Board members and will eventually summarise discussions with them for each of the aforementioned clusters.

The document is structured as follows:

- Chapter 2: This introduction
- Chapter 3: Background of Advisory Board members
- Chapter 4: Mapping background knowledge of Advisory Board members with PLANET contents
- Chapter 5: Overview, clustering and filtering of available information
- Chapter 6: Activities around and communications with the Advisory Board
- Chapter 7: Observations and Recommendations of the Advisory Board members
- Chapter 8: Conclusions

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PLANET addresses the challenges of assessing the impact of emerging global trade corridors on the TEN-T network and ensuring effective integration of the European to the Global Network by focusing in two key R&D pillars:

- A Geo-economics approach, modelling and specifying the dynamics of new trade routes and their impacts on logistics infrastructure & operations, with specific reference to TEN-T;
- An EU-Global network enablement through disruptive concepts and technologies (IoT, Blockchain and PI, 5G, 3D printing, autonomous vehicles /automation, hyperloop) which can shape its future and address its shortcomings, aligned to the DTLF concept of a federated network of T&L platforms.

PLANET goes beyond strategic transport studies, and ICT for transport research, by rigorously modelling, analysing, demonstrating & assessing their interactions and dynamics thus, providing a more realistic view of the emerging T&L environment. The project employs three EU-global real-world corridor Living Labs including sea and rail for intercontinental connection and provides the experimentation environment for designing and exploiting future PI-oriented Integrated Green EU-Global T&L Networks [EGTN]. To facilitate this process, PLANET delivers a Symbiotic Digital Clone for EGTNs, as an open collaborative planning tool for TEN-T Corridor participants, infrastructure planners, and industry/technology strategists.

PLANET also delivers an Active Blueprint and Road Map, providing guidance and building public & private actor capacity towards the realisation of EGTNs, and facilitating the development of disadvantaged regions. The project engages major T&L stakeholders, contributing to both strategy and technology and (importantly) has the industry weight and influence to create industry momentum in Federated Logistics and TEN-T's integration into the Global Network.

The PLANET consortium comprises 33 partners of which 75% are represented in the project's LLs and who collectively represent a large cohort of principal EU and Global T&L actors (e.g. COSCO SHIPPING Lines (Spain) and COSCO SHIPPING Technology (Beijing), DHL, Jing Dong Logistics, FM Logistics, ROHLIG SUUS Logistics, Polish National Post, Ports of Valencia and Sines); leading research institutions (CATS China Academy of Transportation Sciences, Centre for research and technology Erasmus University Rotterdam, Instytut Logistyki i Magazynowania, Fundación Zaragoza Logistics Center, Wuppertal Institute); Industry associations (ESC, UIRR, NEWO); Standards organisations GS1 in Poland and China. The consortium's technological strength is amplified by IBM (Blockchain, Predictive and Optimization Analytics) as well as the support of specialist SMEs (e.g. PANTEIA TEN-T experts, ITA for complex simulation and modelling, , Ontotext, Konnecta and VLTN intelligent connectivity tools and globally federated knowledge graphs from GIS databases that incorporate all transport routes and corridors, eBOS for compliance and intelligent dashboards, HARDT HYPERLOOP and New Generation Sensors). INLECOM, a well-known and highly experienced PMI-certified coordinator of EU T&L projects, coordinates the project.

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To advance the European Commission's strategy for Smart, Green and Integrated Transport and Logistics by efficiently interconnecting infrastructure (TEN-T, Rail-Freight Corridors) with geopolitical developments (e.g. future New Silk Road and emerging trade routes), as well as to optimise the use of current & emerging transport modes and technological solutions, while ensuring equitable inclusivity of all participants, increasing the prosperity of nations, preserving the environment, and enhancing Citizens quality of life. The realization of this vision is what PLANET calls the **Integrated Green EU-Global T&L Network (EGTN)**.

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PLANET is structured in the following seven work packages as provided in Table 1.

Table 1. Overview of PLANET work packages and number of deliverables

WP no.	Title	No. deliverables
WP 1	EU-Global T&L Networks [EGTN]	11
WP 2	PLANET Cloud-based Open EGTN Infrastructure	20
WP 3	PLANET Living Labs	10
WP 4	Steering innovation & building capacity towards EGTN	5
WP 5	Dissemination, Commercialisation, Policy recommendations	7
WP 6	Project Management	5
WP 7	Ethics requirements	4
	TOTAL:	**62**

Each of the work packages produce different numbers of deliverables which were provided in Table 1 as well and which are totalling a number of 62 documents. A more detailed list of relevant Deliverables for this Deliverable is provided in Annex 1.

The work packages have the following objectives and will seek to deliver the outcome as specified below (derived from the list of deliverables):

- WP 1:
  - Objectives: WP1 will provide a 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 will define the Reference Specifications of Integrated Green EU-Global networks [EGTN]
  - Outcome:
    - EGTN Foundational Position Papers and Simulation Scenarios
    - Modelling & Simulation Capability
    - Simulation based impact of new trade routes on the TEN-T and disadvantaged regions
    - Legislation and EU policy to impact EGTN
    - Simulation-based analysis of T&L and ICT innovation technologies
    - EGTN Reference Specification
- WP 2:
  - Objectives: WP2 will define the architecture and prototype the components of an open ICT infrastructure compliant with the requirements specification from T1.5, to support the development of EGTN solutions in the LLs (WP3) that open up more opportunities for global connectivity, international trade, and economic development. The work package will 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.

- Outcome:
  - Open EGTN Platform Architecture
  - EGTN IoT Infrastructure
  - EGTN Connectivity Infrstructure
  - EGTN Transport Data and Knowledge Models
  - EGTN Support Services based on Big Data analytics models
  - Cloud deployment of EGTN logistics services
  - Multi-Actor Multi-Criteria Analysis DSS
  - Intelligent PI Nodes and PI Network services
  - Integration and Interoperability of proprietary Blockchain Systems for Seamless Global Trade Workflows
  - EGTN smart contracts and associated PI motivated workflows in the context of SLA management
  - Unified HMIs implementation and technical documentation

- WP 3:
  - Objectives: WP3 is designed 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. Outputs from the three LLs will be linked into a generic use case defining the introduction of the EGTN new logistics concepts & technologies that were tested in the LLs and will support design and evaluation of EGTN solutions by TEN-T and T&L communities. Each LL will investigate and test the main elements of EGTN as specified in the objectives section, specifically under R14
  - Outcome:
    - Specification and Baseline measurements for all Living Labs
    - EGTN Solution description and test results for all Living Labs
    - EGTN Generic use case
    - Application of EGTN generic Use Case in port of Sines and transferability guide
    - EGTN impact assessment

- WP 4:
  - Objectives: WP4 will provide guidance and capacity building towards an integrated Green EU-Global Trade Logistics Network aligning with global T&L blockchain initiatives and ALICE PI roadmap as per Objective 4. This will require the development of geo-economics awareness (how does the EU network fit in the geo-economics context?), and technology awareness (how technological innovations can be deployed in support of the network?) with all stakeholders amongst which are innovation communities, logistics and transport communities, as well as policy makers.
  - Outcome:
    - Recommendations for TEN-T Interfacing to Global trade routes
    - Briefing reports for public authorities and Guide on the inclusion of disadvantaged regions into the international trading system
    - Electronic Visualization Library of outputs from WP1-WP2 and WP3
    - PI-facilitating technology Roadmaps for EGTN
    - Recommendations for PLANET standardisation

- WP 5:
  - Objectives: WP5 ensures sustainability of project outputs from WP1-4. WP5 will lead all the activities related to dissemination, communication and outreach as well the exploitation of the

project results, as per sections 2.3 and 2.4. The interaction with the other WPs will be fundamental. The main activities related to this objective are:
    - To develop and implement a Communication and Dissemination plan, the backbone of the project branding and visibility amongst different stakeholders and communities as detailed in section 2.3.
    - The development of strategies for commercializing the results of the project, with special attention to IP protection and policies recommendations as detailed in section 2.4
    - To provide policy recommendations linking to impact assessment D3.4
  - Outcome:
    - Stakeholder Analysis Report
    - Observations and recommendations of the Advisory Board
    - Communications and Dissemination Report
    - Business & Commercialisation plan
    - Policy framework analysis

- WP 6:
  - Objectives: WP6 aims to implement Management Processes for ensuring the completion of all deliverables in time, within budget and to the required quality standard. Perform administrative management, technical management, innovation management and quality management, which will be carried out to the full satisfaction of the EC, the Council of Partners and the Project Steering Team.
  - Outcome:
    - Project management handbook – management plan (continuously updated)
    - Interim/ Final Technical reports
    - Project Quality Handbook and annual quality reviews (continuously updated)
    - Initial Data management plan
    - Data set made available
    - Innovation management report and Patent Filings

- WP 7:
  - Objectives: The objective is to ensure compliance with the 'ethics requirements' set out in this work package.
  - Outcome:
    - H - Requirement No. 1, Human subject
    - POPD - Requirement No. 2, Protection of personal data
    - NEC - Requirement No. 3, involvement of Non-EU countries
    - EPQ - Requirement No. 4, Ethics Position Questionnaire

The PLANET work plan structure is summarised in Figure 1.

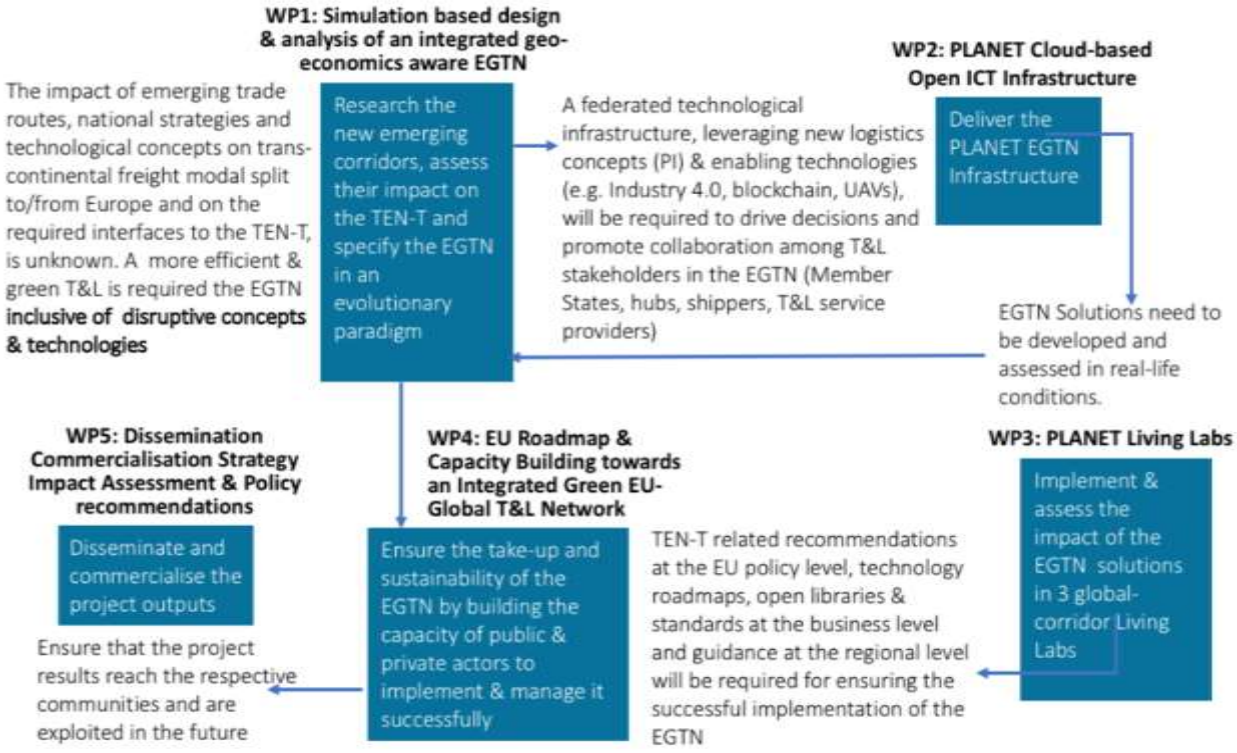

Figure 1. PLANET Work package structure (source: PLANET Grant Agreement)

In short words

- WP 1 will describe the ongoing global changes and identify the necessary requirements;
- WP 2 provides the technological infrastructure, new concepts, and enabling technologies;
- WP 3 assesses these solutions in a real-life environment;
- WP 4 provides recommendations and EU roadmap for the implementation of the EGTN;
- WP 5 identifies the stakeholders and communicates to and with them.

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The purpose of this section is to map PLANET's Grant Agreement (GA) commitments, both within the formal Deliverable and Task description, against the project's respective outputs and the work performed. Table 2 below lists the component title of the GA and its outline against the chapters of this deliverable, incl. a justification.

Table 2. Adherence to PLANET's GA Deliverable & Tasks Descriptions

RNCPGVBCB E g B/k rg	RNCPGVBCEE g B nk g	k gF e g Ej c g	L khec k
FGNK GTCDNCB			
D5.2 Observations and Recommendations of the Advisory Board v1	In this report an initial analysis of the most relevant stakeholders around the PLANET vision will be identified and set up tailored engagement strategies, in order to gather stakeholder information and feedback to support the project's exploitation objectives.	Ch. 3, 4, 5	The respective chapters are not only looking into the PLANET stakeholder analysis which has been performed within T5.1.1 of PLANET but also providing an overview of PLANET key results available so far and listing AB observations and recommendations against it. These findings will then be used to link to PLANET's exploitation strategy in the final version of this report.
VCUMJ	**B**	**B**	**B**
ST5.1.2 Advisory Board	This subtask will provide dedicated communications with the Advisory Board both in requesting advice on specific activities, research questions, and in circulating material for dissemination purposes.	Ch. 2, 3, 4, 5	Chapter 3 lists the background of the AB members which is then mapped against the PLANET output in Chapter 4. Chapter 5 lists the key outputs available so far to which AB members comment on in Chapter 6.

[redacted]

Advisory Board members were first selected during the PLANET proposal phase. Once the PLANET vision and mission, and the overall objectives were defined, an analysis was performed for each of the work packages within the project regarding the necessary expertise needed. Experts working in the specific areas were then selected and contacted via the work package leaders to join the Advisory Board.

In more detail, this process was performed like this:

- For each 'content-related'[1] work package (Work packages 1 to 5, not WP 6 and WP 7), identify the objectives for each task and the work package itself
- For each content-related work package, identify the methodology used to achieve the aforementioned objectives
- Identify the expertise needed for each of these methodologies
- Contact experts with a proven record of this expertise, either from within the network of PLANET partners or outside of it, and ask them for a Letter of Interest to join the Advisory Board in case the PLANET project would be funded

The objectives and planned outcomes of the PLANET work packages have been summarised in section 2.3 and Figure 1 already. Table 3 lists the key expertise needed for each of the work packages and related tasks.

As stated before, WP 6 and WP 7 are not included in this analysis since the idea of the Advisory Board was to steer and guide the project only for 'content-related'[1] work packages.

Table 3 shows that the required expertise sits across a whole range of topics such as the understanding and the future of global trade routes, simulation and modelling of such routes, network architecture and IT, experience in supply chains and transport and logistics, standards and policy recommendations, and business models.

It was therefore decided to aim for a larger Advisory Board with ideally more than 20 members which not only cover the range of topics but also the geographical range of the trade routes which PLANET looks at. Invitations were sent to experts not only in Europe but also overseas (US and Asia) which matched the aforementioned criteria in a way that all work package topics were covered. Overall, 19 Letters of Interest were received by external experts and submitted with the proposal.

When PLANET commenced, all experts who had submitted a Letter of Interest were contacted again to set up the Advisory Board. The setup procedure of the board and the final list of Advisory Board members is described in the following sections. The details of how the Advisory Board members match the expertise required by each work package is described in more detail in chapter 4.

[1] 'Content-related' in this context is understood as related to the key objective of the project dealing with logistics, global trade, federated networks, Physical Internet, etc.

Table 3. Expertise required for each of the work packages of PLANET

WP	Title	Expertise required
1	**EU-Global T&L Networks [EGTN]**	
1.1	EGTN Modelling & simulation capability	Global trade routes, supply chain, modelling, simulation capabilities, EU policy, data requirements, innovation
1.2	TEN-T focused modelling and simulation	
1.3	Legislation and EU policy to impact EGTN	
1.4	Simulation-based analysis of T&L and ICT innovations	
1.5	EGTN Reference Specification	
2	**PLANET Cloud-based Open EGTN Infrastructure**	
2.1	Cloud-based Open EGTN ICT Infrastructure Architecture	IT, Architecture, Federated Networks, modelling, simulation, DSS, Big Data, Industry 4.0, Smart Contracts, Ledger
2.2	EGTN IoT and Connectivity Infrastructure Components	
2.3	Predictive and optimisation analytics	
2.4	Group multi criteria DSS for transport and PI Networks	
2.5	EGTN Distributed Ledgers and Smart Contracts	
2.6	Unified interface to EGTN Data and support Services	
3	**PLANET Living Labs**	
3.1	LL1: PI and Blockchain for optimised door-to-door Asia-EU corridors	Logistics and transport (hands-on) experience, Physical Internet (PI), Blockchain, IoT, global trade routes, TEN-T, rail transport, e-commerce, business models
3.2	LL2: China–Rotterdam/USA focusing on rail transport	
3.3	LL3 : IoT for Silk Road Route to EU thr Poland focus e-commerce parcels	
3.4	Generic Use Case and EGTN Impact Assessment	
4	**Steering innovation & building capacity towards EGTN**	
4.1	Recommendations for TEN-T Interfacing to Global trade routes	(EU) Recommendations, Standards, PI roadmaps
4.2	Briefing EGTN reports including disadvantaged regions	
4.3	Open Source Libraries and Transferability Framework	
4.4	PI-facilitating technology Roadmaps (blockchain, ML, Hyperloop, AVs iMLUs, 5G, EGNOS, 3DP)	
4.5	Recommendations for PLANET standardisation	
5	**Dissemination, Commercialisation, Policy recommendations**	
5.1	Stakeholder Engagement, Advisory Board and Support Partners	Dissemination strategies, business models, commercialisation, policy recommendations
5.2	Dissemination Strategy, Communication Plan and Activities	
5.3	Business Models and Commercialisation strategy	
5.4	Policy recommendations	
6	**Project Management**	-
7	**Ethics requirements**	-

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The principal process and selection criteria of the Advisory Board members has already been described in section 3.1. All interested persons who had sent a Letter of Interest during the proposal phase were contacted at the beginning of the project telling them that the proposal has been successful and asking whether they would be now interested to join the Advisory Board. This first contact was made via a contact person (a PLANET partner) who has either initiated the contact or has been assigned as a contact person to this potential Advis[(sec)-2(ti)11(o)-0 1 56.64 678.46 Tm0 3(eec).(g)4( )19(the)10(m)-4Qq0.000008871 0 595.32 841.92 reW*nBT/F1

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- 2 members are from South America
- 8 members are from Europe
- 3 members are from Asia

It should be noted that the Advisory Board is a dynamic group and new members are welcome and actively recruited during the course of the project.

Each Advisory Board member has been assigned several keywords concerning their background knowledge and experience. Table 4 provides an overview of this experience analysis and Figure 3 shows a word cloud where larger (key)words represent more frequent mentioning of this specific background experience.

Table 4. Keyword / expertise analysis of Advisory Board members

Groups	Acr.	Supply chain	Logistics	Transport	Warehouse	IT	Blockchain	Innovation	Auton. Vehicles	e-Toll	Last mile	Economics	Digitisation	Standards	Sustainability	Procurement	Risk managem.	Track&trace	Machine learn.	No. keywords
Members																				
1	CJB		X	X				X			X		X							5
2	ABR	X	X			X				X								X		5
3	DGZ	X	X					X	X				X				X			6
4	JGO	X		X								X								3
5	HCH	X	X	X	X			X												5
6	EIU	X	X					X	X						X					5
7	LLI	X					X													2
8	JLG					X	X	X				X							X	5
9	MMB	X	X	X				X	X		X	X				X		X		9
10	SPS	X		X								X								3
11	OPP	X	X		X															3
12	MRP	X	X	X																3
13	NVB	X	X		X								X		X			X		6
14	JVJ	X	X	X	X	X		X						X						7
15	JIS		X	X																2
16	HWN	X	X	X																3
		13	12	9	4	3	2	7	3	1	2	4	3	1	2	1	1	3	1	

Figure 3. Word cloud of Advisory Board members' background expertise

The key background knowledge of the Advisory Board members lies with supply chains, transport and logistics, but also with innovation, IT, and warehouses. This is not surprising since the selection of members was meant to cover these areas of PLANET. In the following, the background knowledge will be mapped against the Work package structure of PLANET to identify the areas where Advisory Board members can assist most.

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This chapter provides an overview of the selection of the Advisory Board members during the proposal phase of the project. It lists the criteria and provides an overview of the selection and setup process of the Advisory Board.

The second part of the chapter summarises the background knowledge of the Advisory Board members by providing their names, their education and experience, and assigning relevant key words to each of them. It shows that the topics of PLANET are well matched by the expertise of the Advisory Board members so that good and relevant guidance can be expected from the Advisory Board.

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This chapter describes a mapping of the background knowledge of Advisory Board members with the contents and requirements of the PLANET project. Section 4.1 describes the mapping procedure and section 4.2 shows the results of this mapping.

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This section takes the overview of PLANET's objectives, vision, and structure (see chapter 2) and seeks to identify in which area Advisory Board members can best be positioned to assist the PLANET team to achieve the envisaged results.

The mapping is done by listing the keywords which have been used for the background knowledge of the Advisory Board members (see chapter 3) and use these keywords for the work packages in PLANET. As soon as both the Advisory Board member and the work package lists the same keyword, the member is listed against the work package. A final review is then done to cross-check the validity of this approach.

It should be noted that:

- For Work package 1 (WP 1) all members of the Advisory Board are listed since the PLANET vision and the EGTN are concerned;
- This approach is of course on a rather high level and does not go into the details of the tasks of each work package. It is foreseen here, that Advisory Board members can specify their interests themselves at a later stage and get in touch with the authors of any deliverable from any of such tasks.

The following section will show the results of this mapping exercise.

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The result of the aforementioned mapping procedure is shown in Table 5 in which the work packages are listed against the abbreviations of Advisory Board members as introduced in Chapter 3.

Table 5. Mapping of AB members to work packages 1 to 5 of PLANET

WP	Title	Key topic(s)	AB member(s)
WP 1	EU-Global T&L Networks [EGTN]	Global trade routes, supply chain, modelling, simulation capabilities, EU policy, data requirements, innovation	ALL, especially regarding vision (EGTN) and position papers
WP 2	PLANET Cloud-based Open EGTN Infrastructure	IT, Architecture, Federated Networks, modelling, simulation, DSS, Big Data, Industry 4.0, Smart Contracts, Ledger	LLI, JLG, OPP, DGZ, HCH, MRP, JVJ, EIU, NVB
WP 3	PLANET Living Labs	Logistics and transport (hands-on) experience, Physical Internet (PI), Blockchain, IoT, global trade routes, TEN-T, rail transport, e-commerce, business models	OPP, JIS, ABR, CJB, SPS, HCH, JGO, MRP, HWN, JVJ, NVB,
WP 4	Steering innovation & building capacity towards EGTN	(EU) Recommendations, Standards, PI roadmaps	JVJ, HWN, MMB, DGZ, SPS, JGO, JLG
WP 5	Dissemination, Commercialisation, Policy recommendations	Dissemination strategies, business models, commercialisation, policy recommendations	MMB, LLI, EIU, DGZ

Notes: ALL = all AB members, other abbreviations: see Chapter 3
Key topics taken from Table 3

As mentioned before, Table 5 represents a rather high-level overview of where Advisory Board members could assist best. In this first version of the Deliverable on 'Observations and Recommendations', the focus is on first results of Work package 1 where all Advisory Board members are invited to provide their opinions. Specific questions for this purpose have been sent to all members and responses will be further discussed in chapter 7. The next chapter will, however, first address the available results from PLANET which serve as the basis for any observations.

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Whilst chapter 3 provided the background knowledge available in the Advisory Board, this chapter seeks to map this knowledge against the work packages of PLANET.

Whilst this remains on a rather high-level and does not map knowledge against work in each task of PLANET, it shows that the required knowledge in the PLANET work packages are well covered by the expertise of the Advisory Board members.

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This chapter provides an overview of the relevant information for the Advisory Board members to base their observations and recommendations on. Version 1 of the deliverable focusses on deliverables and outputs of Work package 1 of PLANET which

- were available at the time this deliverable was drafted;
- were regarded as relevant for steering the PLANET consortium in the direction of feasible and manageable outputs according to the Grant Agreement (GA) of PLANET;
- were finalised and could therefore serve as a final basis for relevant observations and recommendations (very often deliverables are followed up by a second version of the deliverable towards the end of the project, these types of deliverables are only considered if the first versions are helpful for AB recommendations);
- were not part of WP 6 (Project Management) and WP 7 (Ethics) since the AB focusses on the contents rather than managerial or ethical concerns of the project.

Section 5.1 provides an overview of all PLANET deliverables and publications. 'Deliverables' are understood here as the official 'Deliverables' listed under section 1.3.2 of Annex 1of the PLANET GA. In total 62 Deliverables are foreseen in PLANET. 'Publications' are all other relevant outputs of PLANET which comprise (conference and meeting) presentations, newsletters, website information, Press releases, scientific publications, etc.

Section 5.2 to section 5.4 lists specific deliverables clustered from section 5.1 and described in more detail. These deliverables are the basis for the observations and recommendations by the Advisory Board members summarised in chapter 7 of this deliverable.

Publications are only added to the list of deliverables if they contain additional information which is not di[illegible]ly available [illegible]ables.

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PLANET will deliver a total of 62 deliverables as listed in Table 1. The total list of deliverables has been filtered according to their availability resulting in the list shown in Table 6 (note again that deliverables from WP 6 and WP 7 are not included). The list is sorted after due dates (from early months to more recent months).

Table 6. List of available deliverables for observations and recommendations of AB members

No.	Title	WP	Partner	Type	PU/CO	Due
D5.1	Stakeholder Analysis Report	WP5	28 - PNO	Report	PU	6
D1.2	Modelling & Simulation Capability v1	WP1	21 - ITAINNOVA	Other	PU	12
D1.1	EGTN Foundational Position Papers and Simulation Scenarious	WP1	21 - ITAINNOVA	Report	PU	14
D1.4	Simulation based impact of new trade routes on the TEN-T and disadvantaged regions v1	WP1	27 - PAN	Report	PU	15
D1.6	Legislation and EU policy to impact EGTN v1	WP1	20 - UIRR	Report	PU	15
D1.8	Simulation-based analysis of T&L and ICT innovation technologies v1	WP1	11 - EUR	Report	PU	15
D1.10	EGTN Reference Specification v1	WP1	2 - CERTH	Report	PU	16
D2.1	Open EGTN Platform Architecture v1	WP2	1 - INLE	Report	PU	16

In the following, these deliverables are clustered into overall topics such as Stakeholder analysis, PLANET vision and EGTN, and modelling and simulation. The most important and relevant deliverables are selected and both clusters and the related deliverable results are described in more details in the next sections.

At the end of each cluster, relevant questions are noted which were either asked by PLANET partners involved in the deliverables, or were drafted from reading the deliverables.

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Deliverable of PLANET has dealt with the analysis of potential stakeholders. This section provides a short objectives, the methodology, the results, and some open questions.

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The main objective of the stakeholder analysis is to ensure stakeholders engagement throughout the entire duration of the PLANET project. As a solid foundation, the stakeholder analysis will identify important European stakeholders that are considered relevant for PLANET and will gather information used to mobilise these stakeholders to support the project's exploitation objectives.

A stakeholder analysis is a form of technological intelligence that aims at the identification of the main players in a specific market segment or value chain, their role and their contributions to a particular sector. For the PLANET project, the value chain considered involves Transport and Logistics actors including among others technology providers, hubs, logistics providers or shipping companies.

The secondary objective is to contribute to defining useful exploitation insights for project's results.

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First, the definition of stakeholders has been defined as "Any group or entity with a common interest or stake in the outcomes of the Project and associated to the PLANET value chain ".

The relevant stakeholder groups were analysed in order to understand their interests and influence, and these relationships were mapped visually. Furthermore, this deliverable prioritizes their relevance to PLANET

which will serve to optimize the future efforts to both communicate and engage with them as well as to mobilise them to support the project's exploitation objectives identified in a later stage.

This has also been complemented with the involvement of project partners, that have shared their knowledge about the market and their own needs and expectations in order to clearly understand the profiles of the relevant stakeholder groups that have been identified.

Two large stakeholder groups were identified, namely investors and innovators. The key 'pains and concerns' and 'needs and expectations' were summarised in Table 7.

Table 7. Summary of the needs and concerns of investors and innovators identified in D5.1

	Investors	Innovators
Pains and concerns	- Bottlenecks in operations. - Unexpected events. - Lack of information in decision-making information.	- Integration of legacy equipment. - Balance performance and costs incurred. - Reluctancies and unfavourable sectorial dynamics.
Needs and expectations	- Transparency and seamless information. - Promotion of cooperation among players. - Improved costs and overall performance.	- Leading the PI paradigm. - Build strong consensus for sectorial changes. - Deliver high quality solutions to the market.

The deliverable has therefore set the basis:

- to determine the right communication management strategy according to vital issues for stakeholders;
- to build relationships in the near future with key stakeholders thanks to the identification that has been carried out of entities and issues;
- to set the cornerstone for future commercialisation plans that will be developed for PLANET solutions in later stages of PLANET

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PLANET is fully aware that the stakeholder analysis is 'constantly changing according to interests, changes in external conditions, and the different phases of the process'. Therefore, the Stakeholder Analysis is a living documents which will be updated during the course of the project.

The key focus will be on the industrial players which have been identified for assessing the potential commercialization of the project and produce a complete Business & Commercialization plan.

Open questions could therefore focus on, but are not limited to:

- Are there any additional key stakeholders which would need to be included in this analysis?
- Are the identified stakeholders relevant for developing a business and commercialisation plan?
- Which further steps need to be undertaken to get the PLANET solutions and innovations into business and commercialisation?

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This section deals with all deliverables which directly or indirectly are related to the PLANET vision and EGTN. These deliverables are at this stage of the project:

- D1.1: EGTN Foundational Position Papers and Simulation Scenarios
- D1.6: Legislation and EU policy to impact EGTN
- D1.10: EGTN Reference Specification

This deliverable will focus on the position papers and the resulting simulation scenarios (D1.1) as key input for the Advisory Board's observations and recommendations. The other two deliverables, D1.6 and D1.10, are briefly described in Annex 2 for reference and have been made available for Advisory Board members.

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The primary objective of Deliverable D1.1 is to analyse, understand and assimilate the global, geopolitical, commercial, and economic imperatives of the main European trade routes. The four foundational Position Papers generated by the PLANET project and described in this deliverable seek to provide a compendium of the research and study results related to the main aspects of the development of the EGTN.

These aspects namely include the geo-economic dimension which drives the emergence of new trade routes to EU, the impact of these routes on the existing EU transportation network (TEN-T), the existing land interconnection issues of the TEN-T to networks outside EU concerning rail infrastructure and finally, the emerging of the Physical Internet concept which has the potential to guide the shaping of the EGTN and the role of the PI enabling innovative technologies as tools for the enhancement of transport operations.

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The PLANET Position Papers build upon concepts introduced as part of the proposal submission process, incorporating prior research work, and providing a common understanding of key issues. The areas covered, included:

- PP1: geo-economic analysis of the dynamics and potential impact of new trade routes for EU covering both macro and microeconomic perspectives,
- PP2: impact analysis of New Trade Routes on TEN-T: A preliminary impact analysis on the TEN-T corridors and multimodal transfer nodes (termed Principal Entry Nodes) are performed from economic and environmental perspectives,
- PP3: focused analysis on railway transport-corridors to/from the EU: Interconnection problems relating to economic, information, scientific, technical, and ecological aspects will be studied, and
- PP4: analysis of the transition towards the Physical Internet paradigm: Current thinking models and use cases are consolidated in our position paper.

PP1 states that the international competitive position of Ports and Industries is enabled through the strategic cooperation with logistics hubs in the hinterland, other ports in the EU and across the world. PLANET proposes a new connectivity index for each EGTN transport node. An extension to the model is the integration of landside and shipping connectivity. The latter extension is particularly interesting for seaports as trade patterns may shift from a maritime to a land-based corridor. With this document, an attempt to build a comprehensive understanding of the geo-economic developments and how they influence existing and emerging principal entry nodes and inland nodes in the TEN-T corridors has been performed.

From the point of view of new transport routes (PP2), it is expected to have a gradual intellectual and logistical shift from hinterland transportation to inland transportation and that the TEN-T system will be more intricate than ever before, necessitating far-reaching digital innovations. Also, emerging trade routes as well

as changing intra-regional transport patterns may increase the importance of particular infrastructure stretches from national to European relevance (especially: Principal Entry Points and infrastructure connecting growing sites of production). As emerging trade routes, often entering the EU's territory via third countries, exert a profound influence on intra-TEN-T development, the EU is increasingly compelled to take stock in extraterritorial infrastructure development too.

Regarding the intermodal rail connections on the flanks of the European Union, PP3 identifies the connections between the European (UIC) gauge network and the 1520mm Russian (broad) gauge railway network. The Southeast connections between Bulgaria and Turkey provide a UIC gauge connection for railways between Europe and Asia. The third Bosporus bridge opened in August 2016, and the Argus Railport that will support its functioning promises to add substantial new capacities from 2022-23. There is a plan to connect Europe to Africa through the Gibraltar Railway Tunnel, a project that could create a direct rail freight link to Morocco and Algeria. The planning for this tunnel started several decades ago. The construction of the Gibraltar tunnel is likely not to be decided soon. Lastly, PP3 identifies the mechanisms for international collaboration to organise the administrative trail, the customs procedures, as well as the rail safety, interoperability and communication links between the EU infrastructure and operators and those in the Russian, as well as the Turkish direction to China.

The Physical Internet is an open collaborative framework, which according to PP4 can help improve the use of the resources that circulate along the intercontinental corridors. To be able to carry out "physical" collaboration, sharing resources such as transport or storage areas, it is necessary to carry out "digital" collaboration between companies to properly set up and orchestrate the collaborative processes. Successful collaboration must be carried out on two levels, (a) from the point of view of planning operations and (b) from that of executing operations.

A multi-step scenario definition has also been developed. This approach analyses the external forces that are expected to impact transport in the coming years along with its main uncertainties. Based on the definition of the individual scenarios, a consolidating exercise has been conducted to establish the integrated scenarios to be considered in the upcoming tasks of PLANET.

The deliverable also contains the definition of important indicators. Central is the role of the Corridor Connectivity Index (CCI) as introduced by PLANET and proposed for each EGTN transport node. The Corridor Connectivity Index considers a transport node's level of integration in the global transport network, as manifested by its position in port capacity, efficiency and ease of processes, service frequency, service quality, and digital connectivity. This indicator together with other indicators such as transport costs, reliability, and emissions will be used to analyse the different proposed scenarios.

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The Position Papers and its follow-up scenarios and indicators are regarded key for the direction of PLANET and its developments. This raises the following questions:

- Are the Position Papers sufficiently describing the global, geopolitical, commercial, and economic imperatives of the main European trade routes? If not, which developments / elements are missing?
- Are the developed scenarios considering the external forces well enough and can therefore be used for upcoming tasks within PLANET?
- Is the Corridor Connectivity Index (CCI), together with the other developed indicators, the right methodology to analyse the proposed scenarios?

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Based on the identification of the global, geopolitical, commercial, and economic imperatives of the main European trade routes, incl. the analysis of modelling and simulating their impacts, the following deliverables start to look into the modelling and simulation of these impacts within the PLANET Living Labs (and beyond):

- D1.2: Modelling and Simulation Capability
- D1.4: Simulation based impact of new trade routes on the TEN-T and disadvantaged regions
- D1.8: Simulation-based analysis of T&L and ICT innovation technologies
- D2.1: Open EGTN Platform Architecture

The focus of this deliverable is on the first steps looking into available models to describe the intercontinental freight processes and which (type of) data they require (D1.2). Again, all other deliverables, D1.4, D1.8, and D2.1, are made available to Advisory Board members and are described in Annex 2.

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Objective of this document is a) to provide a detailed description of the available models for representing the freight transport processes in the intercontinental corridors examined in PLANET, and b) to determine the required data for such models.

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The report contains a description of six simulation and four optimization models that can be used to evaluate the different scenarios presented in the living labs as well as more generic type of use cases. Those models do investigate distinct aspects of the supply chain and transport. The complementarities and overlaps of the models have been explored to achieve a complete analysis of the several aspects that influence intercontinental transport.

Two levels of analysis, micro (narrow geographic scope) and macro (broad geographic scope) have been identified and various dimensions are evaluated to exchange relevant information between both levels. A structure is proposed to connect both levels.

An initial data requirements analysis of the models has been carried out and a set of potential data has been identified that can be used to describe the movements of transport freight in the corridors through the connected use of various models. The requirements of the use cases of the living labs have been evaluated. In particular, the parameters and technologies to be evaluated in each use case were analysed. Finally, scenarios have been defined so that they can be evaluated under different simulation and optimization models.

Using as basis the identified available models, complimented by the relevant datasets as described in this report, the project will be enabled to perform scientific analysis and a quantifiable assessment of the EGTN solutions' effect in the diverse Living Labs' Use Cases.

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The deliverable contains a first analysis of the necessary models and the required data. It is expected that both data harmonization and model integration will evolve during the project lifetime to meet Living Lab's specific needs. With this background, open questions could be:

- Are the described models sufficient to model the effect of the EGTN solutions within the Use Cases (and beyond)?
- Can it be expected that the project will be able to provide the necessary data for running the models?
- Which further models / data are needed to match the envisaged EGTN platform and its services?

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This chapter provides information on available and relevant deliverables of PLANET which form the basis for the Advisory Board to draft its observations and recommendations.

The available deliverables were brought together in three main clusters which are i) Stakeholder analysis, ii) PLANET vision and EGTN, and iii) platform and simulation.

For each of these clusters, the most relevant deliverables are described with respect to their objectives, results, and open questions. Further deliverables, also available under this cluster, but not regarded similarly relevant for this deliverable at this stage, are described in Annex 2.

Overall, this chapter provides the basic questions for the Advisory Board members to comment on and to advise whether PLANET has the right starting point and will achieve its objectives when addressing these questions as planned.

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Chapter 6 provides an overview of interactions and activities with the Advisory Board members, ranging from communication (section 6.1) and meetings (section 6.2), to terms of reference (section 6.3).

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For better and easier access to documents produced by PLANET, all Advisory Board members who had signed the NDA (see section 3.1), have been provided login details to the 'Private Area' of the PLANET website (Figure 4) under https://www.planetproject.eu/private-area/. The Private Area is managed by the PLANET partner Fundación Valenciaport which is in charge of Work package 5 (Dissemination, Commercialisation, Policy recommendations).

Figure 4. Private Area of the PLANET website

The Private Area features an online directory with selected documents available for download and for exchange. This comprises documents from

- Meetings (agenda, presentations, recordings, minutes, etc.)
- Deliverables (all PLANET deliverables, incl. intermediate versions if relevant for review)
- Publications (conference contributions, papers, press releases, newsletters, etc.)
- Media (PLANET video, photos from events, etc.)

The Private Area is now populated with an increasing number of documents, especially deliverables, the final of which is uploaded as soon as the internal review process is finalised. If requested by any Advisory Board member, temporary documents will also be uploaded in the respective section of the Private Area. It is foreseen that the Private Area will also contain Advisory Board specific information and serves as an exchange platform, also for temporary files and versions of Advisory Board documents.

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Advisory Board members have participated in three official PLANET meetings so far which are:

- First PLANET General Assembly on 7 October 2020 (part on position papers where three out of the four position papers were discussed)
- First Advisory Board meeting on 30 September 2021
- Second Advisory Board meeting on 21 October 2021, after the Second General Assembly on 20 October 2021

Due to COVID-19, all these meetings were held as virtual meetings. The meetings are summarised briefly below. All meeting agendas and minutes plus the relevant presentations have been made available to the Advisory Board via the Private Area of the PLANET website.

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PLANET's first virtual General Assembly, 5 months after the project kick-off was attended by over 70 participants, and 5 Advisory Board members. The first part of the event reiterated PLANET's focus areas and objectives along with an overview of early achievements as well as short-term contractual obligations.

Three position papers were discussed as follows:

- **Position Paper 1** – Goals: measure and monitor connectivity of principal entry nodes and inland nodes. Monitoring and comparing CCI values over time can be linked to new-trade routes. CCI would be a mix of objective and subjective components
- **Position Paper 2**: New trade routes' impact on TEN-T Corridors and nodes.
  - (a) Emerging trade routes will primarily consist of fast, high-quality connections that are capable of efficiently handling flows of high-value goods
  - (b) Intracontinental rail freight services are well-positioned and therefore expected to grow (EU – China as well as the wider Eurasian hemisphere)
  - (c) Emergence of economic activities in the Arctic region will entail an upcoming trade route
  - (d) These emerging trade routes will find their entry points into TEN-T and from there exert a considerable influence on TEN-T development
- **Position Paper 3** – main findings: (a) PLANET Living Labs need to take into account the rail connections – in every direction and on every time-period, (b) Infrastructure developments in the pipeline (eastbound) and on the drawing board (towards Africa) need to be completed and (c) alignment of operati[redacted] customs procedures are a must to achieve efficient and competitive flow of rail freight traf-

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The first PLANET Advisory Board meeting was held on 30 September 2021 and was attended by 10 (out of 14 members[2]) of the Advisory Board and 6 members of the PLANET team. The meeting featured an introduction round with a brief introduction of the Advisory Board members, a high-level overview of the PLANET project, a discussion of the current state of the position papers, and an initial discussion about the Terms of Reference for the Advisory Board.

All position papers were sent to all participants ahead of the meeting.

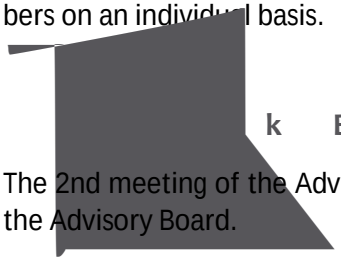
The discussion included the following points:

- The situation in the US:
  - Lack of harmonisation of ports in US and Europe.
  - Ports need to be embedded in the emerging supply chains.
  - Lack of sustainability and resilience aspects
  - No visibility of data
- Data availability and standardised data formats. Many different formats coming from different transport sources (OPP)
- Stressing the importance of the long-term way of thinking
- Visibility of processes as added value of Industry 4.0 technologies.

[2] Note: the current number of 16 Advisory Board members was only reached after the two Advisory Board meetings.

- How can the models developed by PLANET and its parameters be updated frequently?
- The models make predictions for many years after the end of the PLANET project. Related to the question of keeping the predictions updated, is there an intention to maintain the project outputs after it ends?
- Can PLANET make a recommendation to the EC to keep the PLANET models alive beyond the project's end date?
- How can PLANET manage the short-term approach of the living labs with a more long-term approach?

Since time during the meeting was too limited, it was agreed to discuss (some of) these points with AB members on an individual basis.



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The 2nd meeting of the Advisory Board was attended by over 30 participants, both from PLANET and from the Advisory Board.

The meeting was started by a high-level overview of PLANET with key objectives, the structure, and the timeline of the project. It was followed by a presentation on PLANET's vision, the EGTN (Integrated Smart Green EU-Global T&L Network) comprising the objectives, definition, and attributes, the six profile characterisations, the components, and the three fundamental layers of the EGTN.

In the following, the key research questions regarding new global trade routes were discussed:

- What is the relation between geoeconomics and new trade routes?
- What are the dynamics of these trade routes?
- How can we measure and monitor the impact on existing TEN-T corridors?

Both the Corridor Connectivity Index (CCI) to measure and monitor connectivity of principal entry nodes and inland nodes, and the 2019 baseline results and future models of the three identified trade routes (Belt and Road initiative, Northern Sea Route/Arctic Route, and North-South Trade Corridor) were then discussed in more detail.

Part 2 of the meeting focussed on Living Lab 2 (LL2) looking into 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). The different Use Cases (UC) within LL2 were presented.

Finally, the planned works within Workpackage 2 of PLANET and first simulation results were presented. The former focused on the EGTN technology platform, detailing the approach, the services, the methodology, and the value proposition, whereas the latter showed the concept of predictive models using big data sets, e.g., the warehouse pellet flow forecasting model, the container flow forecasting model, and the actual arriving time forecasting model.

Discussions were about:

- The Connectivity Index, which in the Digital dimension could also consider the availability of standard interfaces (e.g. REST APIs) as well as use of standard data structures (such as GS1);
- The principal approach of the CCI which is applicable to all corridors worldwide;
- The complexity of (simulation) models and whether more simple models would not be sufficient. Whilst participants widely accepted the complexity of the system(s) and the general need for improvements of the infrastructure, it became clear that PLANET would contribute
    - to identify the bottlenecks and an optimisation of congestion issues
    - to determine and quantify potential improvements of the existing situation;

- to improve business;
- to optimise transport routes and alternatives by PI;
- to optimise the existing capacity issues; and
- to validate developed models by users in the Living Labs

- Non-technical issues such as the large lack of interaction and collaboration within the different governmental bodies (states, specifically in the US) which makes it difficult or impossible to optimise the current situation.

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The role of the Advisory Board has been described in the PLANET Grant Agreement (GA). The GA is the PLANET contract with the European Commission). Excerpts from the GA regarding the Advisory Board comprise:

- The Advisory Board will offer impartial scientific advice, support the PST and advise the consortium on social, environmental, technological, legal and economic factors that may influence the innovation management of PLANET.
- It will be chaired by one of its members, elected upon the Advisory Board's first meeting in M1. The Advisory Board comprises of a gender-balanced group of 24 external advisors representing research and business interests, drawn from across the world and embracing a range of knowledge of the project's focus areas.
- The Advisory Board will meet annually at the same time with CoP meetings, but members with specific expertise can be invited to PST meetings as and when appropriate.
- The Advisory Board, composed of external experts, will provide observations and recommendations to the project consortium.
- The PLANET Advisory Board is an independent group composed of external experts that will provide expert advice to the project in order to maximize the impact of the project results ...
- ... advice on specific activities, research questions and in circulating material for dissemination purposes.
- Contributions to PLANET Deliverables D5.2 and D5.3 which are 'Observations and Recommendations of the Advisory Board', version 1 due M18 and final version due M36, respectively.

The Terms of Reference (ToR) were drafted on this basis and circulated to all Advisory Board members. The ToR are attached to this deliverable in Annex 4.

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This chapter summaries of interactions and activities with the Advisory Board members which have taken place so far.

The setup of the Advisory Board is briefly summarised describing the installation of the board from Letters of Intent which were submitted as part of the PLANET proposal, over the Non-Disclosure-Agreement (NDA) which Advisory Board members have to sign until the full establishment of the Advisory Board.

It also describes how the communication and document exchange is handled via the Private Area of the PLANET website which serves as an online repository of relevant documents produced by PLANET and to which only Advisory Board members have access.

Three meetings have taken place with participation of Advisory Board members, namely i) the First General Assembly where the Advisory Board members participated in the discussion about the position papers for the first time, ii) the First Advisory Board meeting with a more thorough look into the position papers, and iii) the Second Advisory Board meeting (parallel to the 2nd General Assembly) where the most recent PLANET results were presented and discussed.

As a last point, this chapter introduced and discussed the Terms of Reference (ToR) of the Advisory Board which is based on the statements from the Grant Agreement and which still have to be finally accepted by all members.

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This chapter seeks to summarise discussions, observations, and recommendations by the Advisory Board members on the selected topics which have been described in more detail in chapter 5. These topics were:

- PLANET Stakeholder Analysis
- PLANET vision and EGTN
- PLANET modelling and simulation

The input from Advisory Board members were obtained from various sources, either by i) discussions during meetings, ii) from e-mail communications, iii) from personal contacts, and iv) from interviews with Advisory Board members on these topics.

The responses and communications are summarised here according to the topics and both observations and recommendations are listed together with (intended) actions of PLANET to accommodate these recommendations.

Section 7.1 will first list the results with respect to the Stakeholder Analysis performed within the first months of PLANET. Section 7.2 will then look into the recommendations regarding the PLANET vision and EGTN whereas section 7.3 deals with the analysis of modelling and simulation models and data to fulfil the PLANET vision regarding EGTN.

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The first cluster centres around the stakeholder analysis performed in Work package 5 of PLANET (see section 5.2). The stakeholder analysis report (Deliverable D5.1 of PLANET) was made available to all Advisory Board members via the Private Area of the PLANET website at an early stage of the project. The key questions which were discussed with the Advisory Board members focused around:

- Are there any additional key stakeholders which would need to be included in this analysis?
- Are the identified stakeholders relevant for developing a business and commercialisation plan?
- Which further steps need to be undertaken to get the PLANET solutions and innovations into business and commercialisation?

The following observations and recommendations were received by the Advisory Board:

- The underlying report (D5.1) is very well written and comprises a detailed methodology and analysis of stakeholders available in the sector. The mapping of results is profound and detailed in order to provide sufficient information for the further analysis/use of this analysis for the key objective to exploit PLANET results and tools, develop business models, and bring them to market.
- The methodology is built on available databases and tools where EU and national European (R&D funded) projects (67) and a patent database (192 patents) were scanned using specific (combinations of) search terms. The results of these searches are then analysed and mapped with respect to some pre-selected criteria. Annexes I and II provide the found stakeholders from searching the projects and patent database, respectively.
- The research is however focussed on Europe whereas PLANET is looking to global supply chains and global trade routes. Whilst the Advisory Board believes that the stakeholder environment in Europe is sufficiently mapped, the open question is whether the findings are transferable to other relevant markets and geographical areas (US, Asia, China, etc.).
- The findings are limited to organisations which either have participated in R&D funded projects (in Europe) or organisations which have submitted a patent in the sector. This seems to be the reason why the list of stakeholders comprise mostly universities and larger companies. Hence, the methodology might miss organisations which are working e.g. in a business environment (SMEs, companies, etc.) or have not (yet) submitted patents despite innovative and market-ready ideas.

Advisory Board recommendations:

Overall, the Advisory Board expressed their positive approval of the Stakeholder Analysis performed and recommend four major directions for making use of the analysis performed.

1) Develop applicable tools and instruments: The analysis should be used to further develop PLANET methodologies, models, and tools together with the identified stakeholders into market-ready and applicable instruments. The Living Labs of PLANET are considered key for applying and testing these tools and the identified stakeholders should be involved in these processes at a very early stage.

2) Lookout beyond Europe: Stakeholders outside Europe should be also considered due to the global perspective of PLANET looking into developing global trade routes. A clear focus should be put on overseas and Asian companies with a clear focus on and interest in the European market.

3) Consider smaller companies: Extend the analysis to SMEs and smaller companies which also play an important role in developing and applying innovative ideas in the field of Physical Internet, IoT, Blockchain, Artificial Intelligence, etc. Start-ups and smaller companies are very often drivers of new technologies implemented in the market and therefore should be considered important stakeholders.

4) Funding opportunities: Funding instruments are considered a key requisite for implementing new technologies into a developing markets and PLANET should also look into options for funding and supporting new ideas, technologies, and business models. Although funding organisations should not necessarily be considered as stakeholders as such, their importance should not be neglected and options for funding should be identified.

Within Work package 5 of PLANET, the aforementioned comments and recommendations of the Advisory Board have been discussed and the following insights and comments have been given:

- PLANET wishes to thank the Advisory Board members for their positive review of the D5.1 report and thankfully acknowledges the constructive comments the Advisory Board members have provided.
- With respect to the four recommendations, PLANET has discussed the following responses:
  - Ad 1) The Stakeholder Analysis was indeed performed to identify the key stakeholders which could play a vital role in using PLANET results for developing market-ready instruments. PLANET envisages that these stakeholders will be contacted and are indeed involved as early as possible in any development steps towards market-ready products.
  - Ad 2) The key stakeholders identified by PLANET are considered to play a key role in monitoring, acting, and developing the global trade routes. They are also collaborating with overseas and Asian companies to ensure that the global perspectives on the developing markets and trade routes are considered. The key focus of the PLANET Stakeholder Analysis was, however, to focus on the European market and to identify the key stakeholders there.
  - Ad 3) PLANET acknowledges the relevant input and importance of start-ups, SMEs and other smaller companies. It is for this reason that many partners of PLANET are SMEs and smaller companies. On the other hand, the Stakeholder Analysis has confirmed that larger companies and multinationals are the key drivers to innovation in the market since they very often have the necessary investment power and infrastructure.
  - Ad 4) PLANET has a clear focus on innovation and development towards a EGTN. Funding opportunities and instruments are not part of the PLANET scope but PLANET is very aware of their importance. This is also the reason why PLANET is in close contact with other European projects where there is a clear focus on funding instruments and bringing innovation and funding together (e.g. the European ENTRANCE project where a matchmaking platform is being developed, see https://www.entrance-platform.eu/the-project/).
- Overall, PLANET partners acknowledged the positive and constructive way of comments of the Advisory Board and believe that their comments are either already implemented or can and will be performed with some smaller modification of the next steps to deal with the Stakeholder Analysis.

[redacted]

Cluster 2 in this Deliverable focusses on the PLANET vision and EGTN (see section 5.3). The PLANET vision was introduced and discussed during the 2nd Advisory Board meeting. The position papers have been introduced during the First General Assembly of PLANET to which Advisory Board members were invited and were further discussed during the First and Second Advisory Board meeting. The four position papers deal with the following topics:

- Geo-economic analysis of the dynamics and potential impact of new trade routes for EU;
- **Impact analysis of New Trade Routes on TEN-T corridors** and multimodal transfer nodes from economic and environmental perspectives;
- **Focused analysis on railway transport-corridors to/from the EU**: Interconnection problems related to economic, information, scientific, technical and ecological aspects;
- **Analysis of the transition towards the PI paradigm**, considering the role of IoT, BC, smart contracts, participation incentives mechanisms, automation and autonomous technologies, 5G, 3D printing, UAVs and hyperloop

Overarching discussion points and questions were identified as follows:

- Are the Position Papers sufficiently describing the global, geopolitical, commercial, and economic imperatives of the main European trade routes? If not, which developments / elements are missing?
- Are the developed scenarios considering the external forces well enough and can therefore be used for upcoming tasks within PLANET?
- Is the Corridor Connectivity Index (CCI), together with the other developed indicators, the right methodology to analyse the proposed scenarios?

The following observations and recommendations were received by the Advisory Board:

- The Advisory Board acknowledges the European Commission's strategy for Smart, Green and Integrated Transport and Logistics by interconnecting infrastructure with geopolitical developments, and by optimising the use of current & emerging transport modes and technological solutions. PLANET's approach to realise this vision by structuring it into three layers and providing a 6-step profile is a very promising approach.
- The four position papers of PLANET represent an excellent starting point of PLANET as a research project dealing with the combination of the relevant topics considered therein. It is acknowledged that the authors of each of these position papers have a very profound background in the respective topic and have performed a very good piece of research answering the key question of not only where the current position of each of these topics is but also in which direction it will go.
- The position papers should be made available to a wider international (academic) audience by publishing them in appropriate conferences and journals. This would potentially trigger feedback and further input where PLANET would benefit from.
- The Advisory Board would like to enter into a discussion on the statement (in the Position Paper on the new trade routes) that trade patterns may shift from a maritime to a land-based corridor. The reasoning and background information for this statement should be further elaborated.
- An additional point was raised regarding future rail links in between Europe and Asia or Africa which may want to consider political developments in between the countries involved, e.g. the recent developments in between Morocco and Algeria when considering the Gibraltar Railway Tunnel project.
- The scenario methodologies developed to be able to model the future of Europe are rightfully considering the future development of Europe (drought, regionalisation, globalisation) and the future of the Physical Internet (PI adoption and supporting policies) and are supported by first indicators proving these tendencies.
- The consolidated scenarios, based on the aforementioned methodologies and position papers, together with the Key Performance Indicators (KPIs) with four key categories (Corridor Connectivity Index, transport costs, reliability, and emission) are a very good way to be able to model and measure performance for any future development.
- The focus of PLANET's position papers and Living Labs are limited to the specific global trade routes to and from Europe which is understandable from the nature of the project being funded by the European Commission. The development of any PLANET results should, however, consider the transferability of such results beyond the scope of the applications and demonstration performed in PLANET.
- The Advisory Board has discussed and acknowledged the importance of the Corridor Connectivity Index (CCI) which is not only allowing for the use of standard data structures but which would also principally allow for application to all corridors worldwide.
- The importance of data standards and data visibility are especially stressed due to current observations of extremely diverse standards and a very low transparency of data used in transport sources today. The visibility of transport and supply chain processes will also be an added value of Industry 4.0 technologies.

- Within the US, harmonisation between ports (within the US and within US and Europe) is lacking and ports need to be embedded in the emerging supply chains.
- Sustainability and resilience aspects, especially cost-competitive ones, are still not sufficiently well considered in the current transport and logistics processes.
- Non-technical issues such as the lack of communication, interactions, and collaborations of the different governmental bodies (administration, customs, etc.) are still hurdles for any improvements of the current situation and have partly led to a regionalisation (state to state) rather than a globalisation trend.
- In terms of future funding opportunities and overcoming supply chain resilience issues, the installation of public-private partnerships (PPP) should be further explored and expanded[3].

Advisory Board recommendations

In summary, the Advisory Board positively approves the in-detail development of the Integrated Smart Green EU-Global T&L Network (EGTN) and the four position papers which have been drafted by PLANET. The following recommendations were derived from the Advisory Board's observations and discussions:

1) Publish position papers: Make sure that the position papers reach a wider international audience by fostering publications in social media, topic-related conferences, and journal publications. The Advisory Board envisages a positive and constructive feedback and discussion from this publication which will assist in making the development of PLANET models and tools more effective.

2) Think of wider application: Ensure that PLANET developments (models, tools, network, applications, etc.) are applicable as wide as possible, both geographically and time-wise. The former means that any developments should go beyond the geographical boundaries of Europe or global trade routes connecting to Europe, the latter refers to the duration of PLANET as a research project and to ensure that developments are lasting and could even be further developed beyond PLANET.

3) Widen the KPIs: Include further categories in the KPIs being developed so far such as non-technical aspects, sustainability, and resilience. The Advisory Board acknowledges the KPIs as being extremely relevant for measuring performance but from the experience of Advisory Board members it has shown that the mentioned amendments would also needed to be considered.

4) Ensure data and process visibility: the Advisory Board members have experienced a clear lack of transparency of data and processes in transport & logistics and suppl chain during every day work. Therefore, PLANET is advised to further elaborate on ensuring highest possible visibility of data, data flows, and related processes.

Again, the observations and recommendations of the Advisory Board are gratefully acknowledged by the PLANET team. More specifically, PLANET would like to respond as follows:

- Ad 1) The position papers are indeed meant for publication as wide as possible. PLANET has already dedicated one of its newsletters to the Position Papers which is distributed to the PLANET network and

[3] Iakovou, E. & White, C.C. (2020): How to build more secure, resilient, next-gen U.S. supply chains. Brookings TechStream publication, December 3, 2020, Link

all interested parties who have registered for the PLANET newsletters. In addition, the publication of the position papers is planned as suggested by the Advisory Board. In any case, this suggestion has been very positively received since it confirms the dissemination strategy of PLANET.

- Ad 2) The conceptual approach of PLANET comprises a generic approach. The models, tools, and innovation which will be developed by PLANET will be tested and demonstrated in the Living Labs of PLANET but are envisaged to be applicable for any comparable application in any geographic range world-wide. Also, PLANET will closely link to ETP ALICE (https://www.etp-logistics.eu/) to make sure that availability of tools and PLANET results are available far beyond the end of the PLANET project.
- Ad 3) The proposal to widen the KPIs (categories) is considered relevant for PLANET and will be positively considered. The discussion with the Advisory Board members will continue on this aspect so that in future updates of the KPIs and the CCI will show the importance of any of these amendments.
- Ad 4) The need for data and process visibility is very positively received by PLANET members. PLANET members regard both data and process visibility inherent in the methodology of PLANET, e.g. by implementing a Physical Internet roadmap where digitisation and data exchange are compulsory prerequisites. At the same time, PLANET will ensure that data protection is guaranteed, e.g. by using the appropriate technologies (Blockchain, etc.).

Again, PLANET members seek to continue the very fruitful collaboration with the Advisory Board and will make sure that the proposed updates and developments are available for further review by the Advisory Board.

[illegible]

Cluster 3 on the PLANET modelling and simulation focusses on the principal capabilities of such simulation first (see section 5.4). A brief introduction about the methodology and some modelling results were presented and discussed within the 2nd Advisory Board meeting. Key questions from this analysis are as follows:

- Are the described models sufficient to model the effect of the EGTN solutions within the Use Cases (and beyond)?
- Can it be expected that the project will be able to provide the necessary data for running the models?
- Which further models / data are needed to match the envisaged EGTN platform and its services?

The following observations and recommendations were received by the Advisory Board:

- The Advisory Board has understood the background concept of simulation and modelling capabilities within PLANET and acknowledges the vast experiences of PLANET members to pursue the key objective to simulate the future developments /scenarios as expressed within the EGTN and position papers.
- The complexity of the suggested models have been critically discussed during Advisory Board meetings and found necessary to simulate an extremely complex (international) reality. The Advisory Board therefore acknowledges the PLANET approach to
  - identify possible bottlenecks and congestion issues
  - find potential mitigations of such limitations
  - optimise transport routes and improvements via Physical Internet approaches
  - search for and overcome existing capacity issues, and
  - validate any of the developed models within PLANET
- The required data for such models are of ongoing concern to Advisory Board members, specifically on two points:
  - All models are expected to run on sufficiently large amounts of data which will need to be provided by stakeholders in the sector, ideally beyond the Living Labs of PLANET. The Advisory Board

questions whether these data is available within PLANET and requests to identify the type and amount of data for the envisaged models;
    - Data for any of the developed models will need to adapt to very different data formats which are currently still in use and very likely will still be used for considerable times. The question arose how the models can deal with these different data formats and/or how flexible they will be to adapt to any future (standardised) format.

- The availability of models and tools beyond the PLANET project duration has been discussed and observations from previous projects suggest that very often a maintenance of tools cannot be provided by the project beyond a certain duration after its termination date. The Advisory Board therefore suggests that PLANET develops a strategy for any of the developed models (and the required data) to make sure that models and tools can be used beyond PLANET.
- As discussed during the 2nd Advisory Board meeting, the 'non-functional attributes' of any model development (such as data governance issues, government regulations, competitive advantages, organisational factors, etc.) need thorough consideration and to be accounted for during the model development.

Advisory Board recommendations

The Advisory Board notes the development steps for the architecture, the simulation and modelling of the EGTN which have been performed within PLANET so far. The following recommendations are given:

1) Transparency of data needs:

- Ad 1) It is part of the PLANET scope of work to not only document the architecture, details, and structure of any of the developed tools and models but also the related data needs. The format and type of data as well as the amount of data will be documented and made available according to the agreed status of the related deliverable. PLANET will also ensure that with any model made available by PLANET there is a documentation and description of which data in which format is needed.
- Ad 2) Whilst PLANET members acknowledge that very often the development and maintenance of EU project models end at the end of the respective project, a strategy has already been developed to be able to maintain the knowledge, the models, and the data beyond the end of the project. With respect to the knowledge, all project deliverables and key publications will be made available through ETP ALICE where a long-term availability can be assured. Concerning the long-term perspective of simulations and models, PLANET is planning to link and integrate them within current available processes and systems of PLANET's business partners. To achieve this, agreements with those partners will be considered during the life of the project to ensure that PLANET outputs can be part of the business and operational models of the participant business agents. It is envisaged to discuss this strategy within one of the future Advisory Board meetings for more detailed exchange in this matter.
- Ad 3) PLANET will demonstrate the network and any developed model within the Living Labs and the stakeholders identified for each of them. The description of work of PLANET specifies the respective steps for the implementation of models into the Living Labs, the required data, and the validation process. Work package 3 of PLANET deals with the Living Labs and documents both the setup and the results for each of the three Living Labs. PLANET will also develop a generic Use Case derived from the three Living Labs which will be applied to the Port of Sines. An overall impact assessment will also be performed to assess the impacts of applying the EGTN.
- Ad 4) PLANET seeks to develop its models and tools to simulate reality as close as reasonably possible. This involves not only technological restrictions but also organisational and non-technical issues which might affect the realisation of the EGTN vision. Within Work package 2 of PLANET, the strategy has therefore been developed
    - to keep models as simple as possible but as complex as needed to simulate a very complex reality;
    - be able to model the observed reality as close as possible;
    - to be always aware of so-called 'non-functional attributes' of the developed models
- PLANET therefore believes that this request of the Advisory Board can be met by the approach taken but will discuss all non-technical issues with the stakeholder involved.

In discussion with all involved PLANET partners, it became clear that the collaboration with the Advisory Board has shown a clear benefit to the project and will improve its achievements. COVID-19 has made the collaboration not easier due to the lack of physical meetings and face-to-face communications but has also proven that it is possible to collate sufficient responses and observations to make the Advisory Board a powerful guidance tool for research-based projects.

PLANET will therefore seek to continue the fruitful collaboration between the project and Advisory Board members in order to get additional input for future project deliverables, to assist in improving the applicability of PLANET outputs, and to better disseminate and exploit project deliverables.

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The following overall recommendations were received by the Advisory Board, focussing on three main topics, all of which should assist PLANET members to focus their effort on the most efficient developments to achieve the overall PLANET objectives in time.

STAKEHOLDER ANALYSIS:

Overall, the Advisory Board expressed their positive approval of the Stakeholder Analysis performed and recommend four major directions for making use of the analysis performed.

1) Develop applicable tools and instruments: The analysis should be used to further develop PLANET methodologies, models, and tools together with the identified stakeholders into market-ready and applicable instruments. The Living Labs of PLANET are considered key for applying and testing these tools and the identified stakeholders should be involved in these processes at a very early stage.

2) Lookout beyond Europe: Stakeholders outside Europe should be also considered due to the global perspective of PLANET looking into developing global trade routes. A clear focus should be put on overseas and Asian companies with a clear focus on and interest in the European market.

3) Consider smaller companies: Extend the analysis to SMEs and smaller companies which also play an important role in developing and applying innovative ideas in the field of Physical Internet, IoT, Blockchain, Artificial Intelligence, etc. Start-ups and smaller companies are very often drivers of new technologies implemented in the market and therefore should be considered important stakeholders.

4) Funding opportunities: Funding instruments are considered a key requisite for implementing new technologies into a developing markets and PLANET should also look into options for funding and supporting new ideas, technologies, and business models. Although funding organisations should not necessarily be considered as stakeholders as such, their importance should not be neglected and options for funding should be identified.

EGTN AND POSITION PAPERS:

In summary, the Advisory Board positively approves the in-detail development of the Integrated Smart Green EU-Global T&L Network (EGTN) and the four position papers which have been drafted by PLANET. The following recommendations were derived from the Advisory Board's observations and discussions:

1) Publish position papers: Make sure that the position papers reach a wider international audience by fostering publications in social media, topic-related conferences, and journal publications. The Advisory Board envisages a positive and constructive feedback and discussion from this publication which will assist in making the development of PLANET models and tools more effective.

2) Think of wider application: Ensure that PLANET developments (models, tools, network, applications, etc.) are applicable as wide as possible, both geographically and time-wise. The former means that any developments should go beyond the geographical boundaries of Europe or global trade routes connecting to Europe, the latter refers to the duration of PLANET as a research project and to ensure that developments are lasting and could even be further developed beyond PLANET.

3) Widen the KPIs: Include further categories in the KPIs being developed so far such as non-technical aspects, sustainability, and resilience. The Advisory Board acknowledges the KPIs as being extremely relevant for measuring performance but from the experience of Advisory Board members it has shown that the mentioned amendments would also needed to be considered.

4) Ensure data and process visibility: the Advisory Board members have experienced a clear lack of transparency of data and processes in transport & logistics and suppl chain during every day work. Therefore, PLANET is advised to further elaborate on ensuring highest possible visibility of data, data flows, and related processes.

SIMULATION AND MODELLING:

The Advisory Board notes the development steps for the architecture, the simulation and modelling of the EGTN which have been performed within PLANET so far. The following recommendations are given:

1) Transparency of data needs: The development of models as discussed so far require a large amount of data which is assumed to come from PLANET partners within the course of the project. However, if models will be applied to cases outside PLANET or after the end of PLANET, these data will need to be provided from different sources. A clear description of the data needs to feed into the model would therefore be needed.

2) Support beyond PLANET: the duration of the PLANET project is limited to three years in total, PLANET will end on 31/05/2023. It should be ensured that the developed models and tools are accessible beyond the end of the project and that support can be provided to apply them. A strategy would be required how his can be achieved after the end of PLANET.

3) Validation of models: A key step in the development of projects are real-case applications and validations of models. PLANET needs to make sure that this validation phase of the developed models is performed with i) a proper documentation of the validation process, ii) involvement of the Living Labs and recommendations for further validation outside PLANET, and iii) the involvement of stakeholder identified either from the previously discussed Stakeholder Analysis or via the Advisory Board members.

4) Further consideration of 'non-functional attributes': Models represent a virt(sl)13 Tm0 g0 G[(c)10i] TJETQq0.00000

The purpose of this Deliverable is to summarise the observations and recommendations of the Advisory Board members on the project as a whole or specific elements thereof. This version of the Deliverable focusses on the Stakeholder analysis, the PLANET vision and EGTN, and modelling and simulation capabilities. These topics were selected to confirm the starting point of PLANET and the envisaged vision and direction PLANET intended to go to.

The Deliverable contains a mapping of the PLANET work package topics against the background knowledge of the Advisory Board members on a high level. The latter was performed by scanning the background of all Advisory Board members to identify the key topics of interest, the experience and their education. In conclusion, this approach has shown that the Advisory Board members can not only provide excellent guidance on the relevant topics of PLANET but also have the geographical spread to advise on the international perspective in and outside Europe.

The available and relevant outputs of PLANET which served as a basis for the observations and recommendations of the Advisory Board has been analysed in more detail. Three key clusters, each of which bringing together different deliverables, have been identified as follows:

- Stakeholder analysis
- PLANET vision and EGTN
- Modelling and simulation

The key deliverables for each of these clusters were summarised in more details and key questions for each topic were selected for further discussion with the Advisory Board members. The selection of the deliverables for these clusters resulted from three main criteria: i) the availability of the Deliverables for review, ii) Deliverable's maturity level (version) (certain deliverables have more than one release, with the first one usually focusing on setting up the requirements and the roadmap, therefore later/final versions are best suited for AB's evaluation); and iii) in which way the Deliverable contributes to describe the starting point of PLANET and its vision and mission.

The activities with and communications to the Advisory Board were summarised and have led to observations and recommendations of the Advisory Board which were collated from various sources like meetings, interviews, and e-mails. In short, the following recommendations were provided, clustered around the aforementioned deliverables:

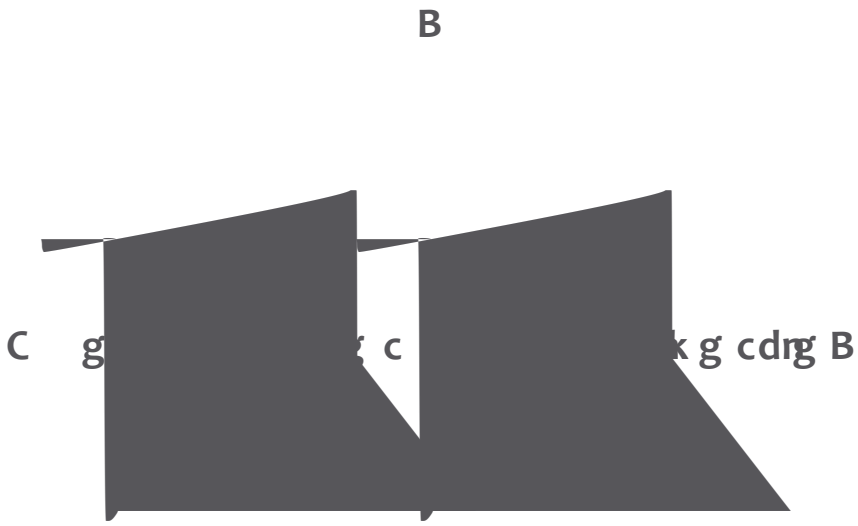
- STAKEHOLDER ANALYSIS:
  - Develop applicable tools and instruments together with the identified stakeholders
  - Lookout to stakeholders beyond Europe
  - Consider smaller companies as relevant stakeholders and bringing new technologies to market
  - Look into options for funding for any of the new tools, models and technologies developed
- EGTN AND POSITION PAPERS:
  - Publish the position papers and reach a wide international audience
  - Ensure that PLANET developments (models, tools, network, applications, etc.) are applicable as wide as possible, both geographically and time-wise
  - Include further categories in the KPIs being developed so far such as non-technical aspects, sustainability, and resilience.
  - Ensure data, data flows, and process visibility as much as reasonably possible
- SIMULATION AND MODELLING:
  - Transparency of data needs for the developed tools and models
  - Ensure that the developed models and tools are accessible beyond the end of the project and that support can be provided to apply them.
  - Provide real-case application and validation of the developed models

- Consider ‘non-functional attributes’ such as policy regulations or competitiveness of companies and implement them as far as possible into the models.

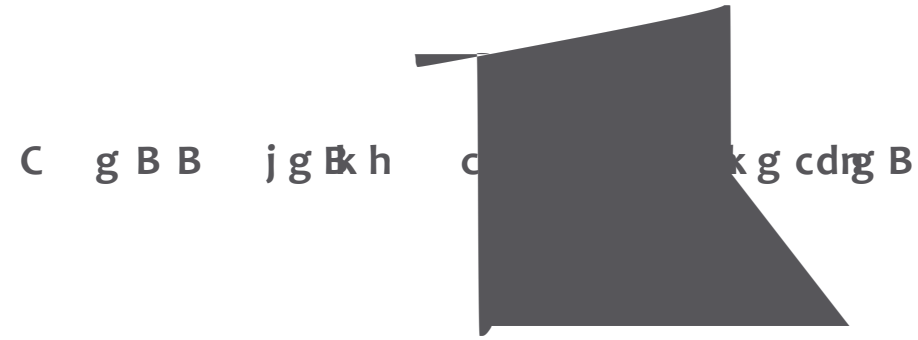
The meetings and discussions with the Advisory Board members has shown that the advice of external experts to the project is extremely useful and can trigger very helpful discussions to stimulate more practice-based and relevant solutions for the project.

The second version of this deliverable (D5.3) will also

Note:



Num-ber	Title	WP no.	Lead beneficiary	Type	Dissemina-tion level	Due Date
D1.1	EGTN Foundational Position Papers and Simulation Scenarios	WP1	21 - ITAINNOVA	Report	Public	14
D1.2	Modelling & Simulation Capability v1	WP1	21 - ITAINNOVA	Other	Public	12
D1.4	Simulation based im-pact of new trade routes on the TEN-T and disadvantaged re-gions v1	WP1	27 - PAN	Report	Public	15
D1.6	Legislation and EU policy to impact EGTN v1	WP1	20 - UIRR	Report	Public	15
D1.8	Simulation-based analysis of T&L and ICT innovation tech-nologies v1	WP1	11 - EUR	Report	Public	15
D1.10	EGTN Reference Spec-ification v1	WP1	2 - CERTH	Report	Public	16
D2.1	Open EGTN Platform Architecture v1	WP2	1 - INLE	Report	Public	16
D5.1	Stakeholder Analysis Report	WP5	28 - PNO	Report	Public	6
D5.2	Observations and Rec-ommendations of the Advisory Board v1	WP5	12 - ESC	Report	Public	18
D5.3	Observations and Rec-ommendations of the Advisory Board final version	WP5	12 - ESC	Report	Public	36



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The deliverable D1.6 on ‘Legislation and EU Policy to impact EGTN’ addresses the results of the analysis of ongoing and forthcoming legislative and policy initiatives that might impact the design and realisation of the EGTN within the PLANET project. The key objective is therefore to evaluate the potential impacts of various legislative and policy initiatives on the EGTN implementation and to assess the key implementation barriers.

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The research on legislative initiatives focuses on the impacts of international and EU initiatives (national level will be covered in the final version of the deliverable). For both levels, the consortium has identified actions that regulate topics such as infrastructure, greening of transportation, digitalisation, operations and inter-modal (modal shift). All these measures might affect at least one of the EGTN dimensions (infrastructure, technology and governance). Most of the inventoried initiatives are impacting the infrastructure components and operations of the EGTN whereas some actions concentrated on the governing rules and on the digitalisation of transport-related documents (consignment note, customs). The first preliminary impact assessment demonstrates that nearly the entire catalogue is EGTN-relevant and will influence the EGTN attributes (Geo-economics aware, Innovation, Impact, Integrated, Inclusive).

The review of policy initiatives concentrated on the activities carried out under the Digital Transport & Logistics Forum (DTLF), the recently published Sustainable and Smart Mobility Strategy and the Sustainable Finance (EU taxonomy) policy. For the DTLF, the impacts of the e-FTI Regulation (as part of the group 1 on paperless transport) and of the development of federated platforms on the EGTN have been analysed and evidences show a clear impact of those policies on the realisation of the EGTN.

For both aspects (legislative and policy initiatives), a preliminary selection of impacts to be fed into PLANET simulation models has been identified and will be handed over to the partners in charge of these models. The outputs of this analysis will also be shared with the three living labs for further analysis and validations (in particular for the review of national legislative and policy initiatives).

The key implementation barriers per legislation and/or per EGTN dimension have proven that a full interoperable EU network does currently not exist and that additional actions need to be undertaken to achieve the initial objectives of the TEN-T or Rail Freight Corridor Regulation. All preconditions for a solid EGTN foundation have also been identified and could be used as part of the PLANET policy recommendations.

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This first version of the deliverable identifies EU wide and international legislation and policies but not yet national ones. It has also identified some potential barriers preventing the implementation of such legislations and policies. The following questions might still need to be answered (amongst others):

- Is the overview of EU wide and international legislations and policies sufficiently well identified?
- How much would national legislation contribute to or contradict the aforementioned legislations?
- Are potential barriers sufficiently addressed and which measures can be found to mitigate such barriers?

[illegible]

[illegible]

Deliverable D1.10 aims to define the characteristics of EGTN based on the work undertaken in PLANET leading to the first set of specifications for the network, broken down to each of the three identified constituting layers which are the a) physical layer, b) technological layer, and c) the governance layer.

The physical layer includes the physical infrastructure of the network in terms of revised/new TEN-T corridors and nodes while the technological layer includes the required digital infrastructure in order for the network to leverage innovative technologies and concepts and operate under a Physical Internet paradigm. The governance layer includes the proper governance form that will ensure that the EGTN members engage in collective and mutually supportive action, that conflict is addressed, and that network resources are used efficiently and effectively.

[illegible]

With respect to the physical layer of the EGTN, the initial results from the assessment of the impact of the three new trade routes on the TEN-T network is that the intercontinental rail freight connections between China, Russia and Europe (belonging to the Belt and Road Initiative) and more specifically the corridor that runs through Kazakhstan, Russia, Belarus and Poland appears to be the most mature route and the only one that will be of significant importance in the near future. The main entry point to the EU through this route is located in Małaszewicze while the most important start and end point for trains to and from China is the inland port of Duisburg. As for the main identified bottlenecks that hinder and delay flows on this route, the Małaszewicze /Brest border crossing is identified as the most important one mainly due to time-consuming custom procedures, followed by the congestion phenomena of the European rail network. The International North-South trade corridor (INSTC) has the potential for serving significant cargo loads but its implementation time horizon is uncertain and also it will be more interesting as a European trade route if European trade can be combined on INSTC trains with Russian cargo. Finally, the freight flows through the Arctic route are not expected to increase significantly, thus keeping the impact on the European TEN-T network negligible.

Regarding the governance model of the EGTN, it appears that a bottom-up approach is the only viable strategy for a more progressive growth of the PI network. According to this approach, different stakeholders will agree among themselves to develop parts of the PI while a central body will be needed to establish common standards for the PI in order to bring these parts together. Moreover, the governance framework will need to support collaboration and asset sharing in horizontally integrated supply networks and also the removal of boundaries between vertically integrated supply chains to allow asset sharing and opportunistic routing and re-planning of shipments across PI nodes belonging to different networks. Legislative and policy initiatives are also required to support the development of the EGTN, including mainly initiatives towards the achievement of interoperability, the greening of investments and the digitalisation of transportation.

The technological layer of the EGTN will be the backbone of the network, supporting and connecting all of its aspects, namely the planning of its development, its governance and operationalisation, through the implementation of innovative technologies and logistics concepts. This will be achieved through the development of a cloud-based Open digital infrastructure that will include tools and models but also through a strategic modelling capability that will be developed outside of it.

In addition to the above, one general conclusion that is inferred from this document is that in order for the EGTN to be able to acquire the desired attributes, the three layers must be developed as a whole and in alignment to each other since the EGTN is intended to provide solutions to complex problems. For example, a possible part of the solution to the request for network resilience includes the development of clusters of

nodes e.g. in the land entry points to the European network, which will help distribute the risk regarding the continuity of operations and deal with fluctuations of freight flows that can cause capacity problems. However, this physical layer characteristic of the network, while critical, is not sufficient by itself. It needs to be supported by the technological layer which will provide the proper digital infrastructure (e.g. regional logistics platforms) to facilitate the operation of the cluster and the development of collaborative logistics and shared capacity models. Moreover, the governance layer will need to provide the proper structure in order to bring all relevant stakeholders together and jointly reach decisions, collaborate and develop joint business models while at the same time it will monitor the results of the implemented solution and plan changes deemed necessary. In this simplified case, each EGTN layer has a special role to play but they need to be combined together in order to achieve the objective of resilience and this is something that needs to be considered in their development.

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Given that the work to make the EGTN operational by the end of PLANET is still ongoing, the following questions may still need to be answered:

- Are the specifications of the EGTN and layers well enough described?
- Is it feasible to reach an operational EGTN by 2030?
- Which further elements are still to be worked out within PLANET to achieve this goal?

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To advance the EU's leadership in global transport flows and logistics, a sound and fundamental understanding of the impact on the TEN-T network of global transport and geo-economic trends needs to be established. Therefore, this report performs a strategic analysis of the most relevant emerging trade routes which are expected to gradually change global transport patterns, and a (in a second version) simulation of their potential impacts on the TEN-T.

This relates to the intercontinental rail freight connections between China, Russia and Europe (Belt and Road Initiative) and the Middle East and Northeast Europe (International North-South Corridor).

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For Eurasian rail freight transport, rail services coming from China and arriving at the European border in 2019 overwhelmingly used Malaszewicze as principle entry point (PEP). The 200.000 TEU per year coming from China translated into some 55 trains per week. About 12% of this flow branched off towards Lodz. Some 23% went to Hamburg and some 44% went on to Duisburg. Smaller flows went to Liege, Ghent, Tilburg and Madrid. Export flows also travel in the opposite direction, but to a lesser extent.

For the International North-South Corridor, we see a current potential of over 86.000 TEU, which could increase to 125.000 TEU in 2030 and 206.000 TEU in 2050. It remains to be seen how long it will take for these volumes to be realised if the route is completed. Only a fraction of the cargo is related to Europe. This concerns 8.500 TEU if the route would be opened right now, which could increase to 13.500 TEU in 2030 and 24.000 TEU in 2050. The corridor is therefore most interesting as a European trade route if European trade can be combined on INSTC trains with Russian cargo.

Regarding the Arctic Route, we have found that its greatest potential lies in the transport of raw materials that come from this region, especially energy-related raw materials. In 2019, approximately 6 ships per week arrived in Europe from this region. Russia has plans to more than triple the amount of raw materials extracted by 2030. However, Russia also plans facilities to be able to process the raw materials on its own soil, so that transport to Europe will no longer be necessary. It is therefore not expected these commodity flows to increase, thus keeping the impact on the European TEN-T network negligible.

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This deliverable contains a first analysis of the 'As-Is' situation of the three key emerging transport routes, namely the Eurasian rail freight transport, the International North-South Corridor, and the Arctic Route. Key open question include, but are not limited to:

- Is the analysis performed for these three routes, accurate and according to observations of AB members?
- How is the future development of these (and potentially other) routes seen by AB members?

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The objective of the research reported in this deliverable is (a) to define the impact of ICT and T&L innovation on EGTN, (b) to assess the impact of emerging concepts and technologies on freight transport corridors and hubs and (c) to position emerging technologies as contributors to the Physical Internet.

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In the context of PLANET, three research questions were asked:

- RQ1:How can the impact of ICT and T&L innovation to EGTN be defined?
- RQ2: How can the impact of emerging concepts & tech on freight transport corridors and hubs be assessed?
- RQ3: How can emerging tech as contributor to PI be positioned?

These questions were addressed by crafting a prototype PLANET integrated modelling capability, by building on top of the work done in previous deliverables which listed the models and modelling scenarios and by combining the effort and perspectives of different modelling partners and the Position Papers' authors.

With the goal of supporting the development of the EGTN concept, this deliverable reports the first steps taken in building PLANET's integrated modelling capability aiming at answering the opening set of three research questions. Concretely, this deliverable: 1) showcases a multi-model quantitative pipeline based on a LL that shows how microscopic (operational) and macroscopic (generalized utility) models can be jointly deployed to assess quantitatively the effect of technology at the macroscopic level; 2) considers and models the effect of containerized commodities having multiple entry points on national transport chains; 3) supports the development of the EGTN concept by estimating the impact of integrated innovations in a TEN-T networks setting.

This deliverable sets up the cornerstone for PLANET's joint planning capability which is a pipeline of quantitative models inspiring the *innovation*, *impact* and *integrated* attributes of the EGTN concept. This prototype made its first run and showed that multiple complex models can be successfully integrated. This is a two-fold result: first, it paved the way for further model integrations and enhancements, leading to the evaluation of different IT and T&L innovations in various scenarios; second, it provided an approach to address and model a range of operational contexts, future scenario logics and a range of emerging technologies.

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The deliverable is a first version of PLANET's integrated modelling capability and will later be continued (deliverable D1.9). There are a couple of key questions where the AB might be able to comment on:

- Is this the right and promising approach to respond to the initiating research questions?
- Will be simulation techniques reported in this deliverable provide future-proof answers to the impacts of emerging technologies and concepts?

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The purpose of this deliverable is to present the open cloud-based architecture of the EGTN Platform. The technical outcome described is a low-entry cost (open) collaboration platform for sustainable integrated multimodal freight transport. The corresponding task aimed to create an open-source blueprint that shall enable any relevant organisation to build upon and to implement T&L design tools, collaborative logistics and new e-commerce models underpinned by data-driven supply chain insights.

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The deliverable includes a detailed specification of the platform based on stakeholder needs analysis and it is inspired by other logistics collaboration platforms from previous Horizon 2020 projects (e.g. SELIS and ICONET). The design and architecture of the platform are presented aiming to point out the state-of-the-art technical solutions behind the blueprint.

The EGTN Platform endeavours to become a powerful platform due to the unique combination of technologies and models it entails. Data Ingestion is handled by versatile mechanisms responsible for importing heterogeneous data from various external sources in batch and/or in real time in a secure manner. A Decision Support System (DSS) allows the users to make important T&L and PI decisions, such as corridor route optimisations, warehouse time reductions etc. The DSS provides data intelligence and is based on different Machine Learning (ML) models, as well as simulation mechanisms. The results of these models and simulations are the basis for the decision-making process. Intelligent forecasting is used with the ultimate purpose of achieving the PI roadmap, while the use of smart contracts facilitates automated and paperless negotiations. Blockchain interoperability aims to overcome the silos of the different Blockchain systems/partners, and, finally, user-accessible dashboards within the Human Machine Interface offer a visual frontend to all stakeholders. Most of the underlying technical solutions used throughout the implementation of the EGTN Platform are industry standard, production proven and open source.

The combination of these technical advancements plays an instrumental role in uniquely positioning the EGTN Platform in terms of technical enablement of the Physical Internet (PI) paradigm. In that context, the EGTN Platform empowers T&L stakeholders by offering them a means to access tools and PI services for routing, node optimisation, shipping, and encapsulation, and so on, as well to collaborate with other T&L actors across borders and organisations in a self-determined and secure way.

The document provides an architectural blueprint for a cloud-based platform, which is versatile enough to accommodate different sizes of T&L/PI actors. Detailed deployment strategies and cloud provider considerations are also covered, aiming to ensure that the platform can be easily adopted by any interested T&L party. Finally, the platform was developed in such a way that it can ensure secure, and seamless integration of logistics services, and it is based on an explicit governance model for onboarding of users, data, and services.

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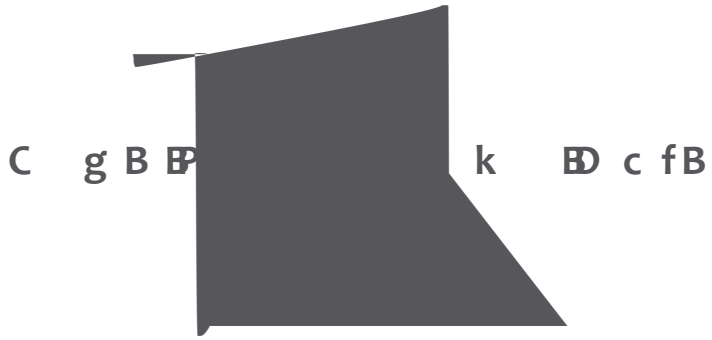
Open questions on the architectural blueprint of the cloud-based platform could comprise:

- There are various platforms (and connectors) under development in the T&L sector (in Europe: AEOLIX, FENIX, PLANET, etc.). How can be assured that these platforms are compatible?
- Is the list of tools and services for the EGTN platform sufficient to cope with the (future) demands and requirements?



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

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.

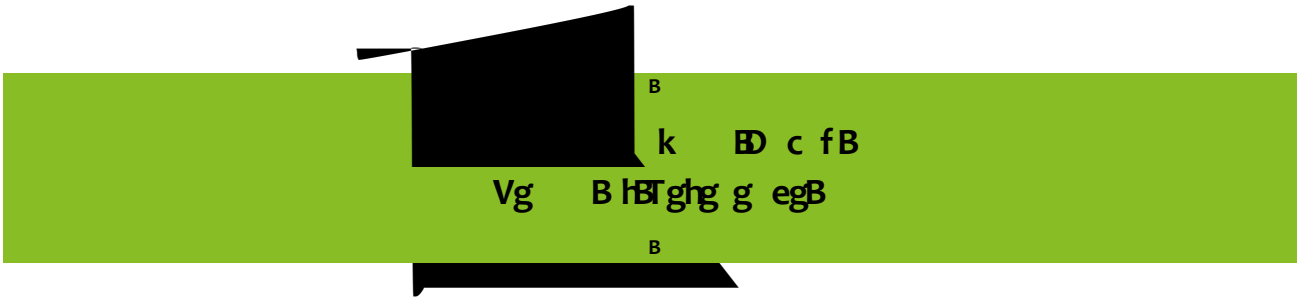
15. The Receiving Party acknowledges and agrees that all property, including intellectual property, in the Information shall remain and be vested in the Disclosing Party.

16. By signing this NDA, the Receiving Party consents to INLECOM (as the project coordinator) keeping their personal data (name, email and affiliation) 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:	**Company name:**
Signature(s):	**Signature(s):**
Name(s):	**Name(s):**
Title(s):	**Title(s):**
Date:	**Date:**

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



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The PLANET project is a 36 month project which commenced on 1 June 2020, and is funded by the EU. PLANET addresses the challenges of assessing the impact of emerging global trade corridors on the TEN-T network and ensuring effective integration of the European to the Global Network by focusing in two key R&D pillars:

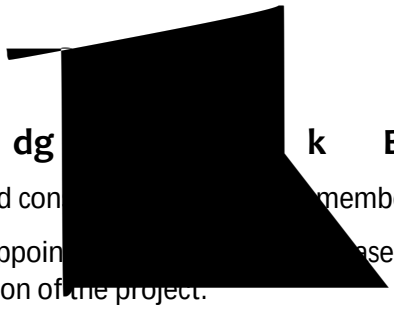
- A Geo-economics approach, modelling and specifying the dynamics of new trade routes and their impacts on logistics infrastructure & operations, with specific reference to TEN-T;
- An EU-Global network enablement through disruptive concepts and technologies (IoT, Blockchain and PI, 5G, 3D printing, autonomous vehicles /automation, hyperloop) which can shape its future and address its shortcomings, aligned to the DTLF concept of a federated network of T&L platforms.

PLANET goes beyond strategic transport studies, and ICT for transport research, by rigorously modelling, analysing, demonstrating & assessing their interactions and dynamics thus, providing a more realistic view of the emerging T&L environment. The project employs three EU-global real-world corridor Living Labs including sea and rail for intercontinental connection and provides the experimentation environment for designing and exploiting future PI-oriented Integrated Green EU-Global T&L Networks [EGTN]. To facilitate this process, PLANET delivers a Symbiotic Digital Clone for EGTNs, as an open collaborative planning tool for TEN-T Corridor participants, infrastructure planners, and industry/technology strategists.

PLANET's vision is to advance the European Commission's strategy for Smart, Green and Integrated Transport and Logistics by efficiently interconnecting infrastructure (TEN-T, Rail-Freight Corridors) with geopolitical developments (e.g. future New Silk Road and emerging trade routes), as well as to optimise the use of current & emerging transport modes and

The role of the Advisory Board is:

- to offer impartial scientific advice, support the Project Steering Team (PST) and advise the consortium on social, environmental, technological, legal and economic factors that may influence the innovation management of PLANET;
- **to contribute by commenting on project deliverables and reports;**
- to raise awareness about the challenges and the potential solutions provided by the project;
- to assist in driving the project by participating in Living Labs of interest;
- to attend Annual Advisory Board Meetings;
- to help in disseminating the project's achievements and results at a mature stage of the project.



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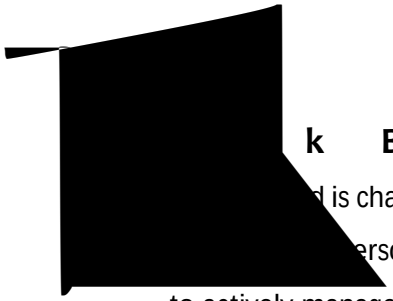
The Advisory Board con members, including a Chairperson.

All members are appoin ased on interest, mutual agreement, and signing the project NDA for the duration of the project.

The PLANET PST will seek to increase the number of AB members during the course of the project. New members may join the Advisory Board at any time based on the aforementioned conditions.

The membership may end in case of voluntary retirement or revocation of the appointment. In that case, the PLANET PST will assess the need of a successor and appoint another person for the remaining term.



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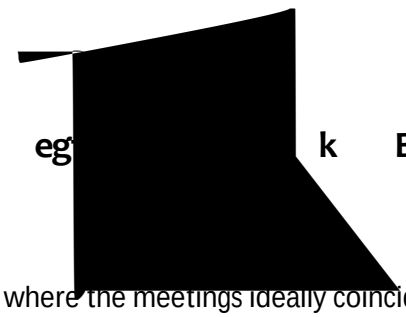
d is chaired by a Chairperson, who is elected by the Advisory Board members.

erson is:

- to actively manage the AB together with the PLANET AB contact person, in view to achieve its given role;
- to hold close contacts with the PLANET Coordinator and the responsible AB contact person;
- to inform and report to the PLANET PST. He/She may be represented by another member of the Advisory Board in this matter;
- to chair the AB meetings.



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The AB will meet annually where the meetings ideally coincide with meetings of the PLANET Council of Partners (CoP). Advisory Board members can also be invited to PST meetings as and when appropriate.

The invitation for Advisory Board meetings will be addressed by the PLANET Coordinator or the responsible AB contact person to the Advisory Board members at least 15 days before the meeting. The invitation shall

include a draft agenda along with all necessary documents. The Advisory Board may meet via electronic means.

The meetings of the Advisory Board and its resolutions shall be recorded by the Chairperson with the assistance of a person appointed by the PLANET Coordinator. The meeting minutes shall be circulated to the Advisory Board within a month after the meeting. Once approved a copy shall be kept by the PLANET consortium.

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The Advisory Board members will receive access to all documents and deliverables of PLANET which are needed to fulfil their role as described under Article 1. Since some documents (will) contain confidential information, Advisory Board members have signed a Non-Disclosure Agreement (NDA) with the PLANET Coordinator.

Access to information and documents will be provided either by email or by providing login details to the designated Private Area of the PLANET website.

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The Advisory Board members will contribute to the following two deliverables of PLANET:

- **Deliverable D5.2**: Observations and Recommendations of the Advisory Board, version 1, due in M18. In this report an initial analysis of the most relevant stakeholders around the PLANET vision will be identified and set up tailored engagement strategies, in order to gather stakeholder information and feedback to support the project's exploitation objectives.
- **Deliverable D5.3**: Observations and Recommendations of the Advisory Board, final version, due in M36. This deliverable is the final version of D5.2 and will be focused on ensuring that the most vital issues for stakeholders are met, relationships with the key stakeholders are built to support the development and implementation of a commercialisation plan beyond the project duration.

For this purpose, the necessary PLANET documents will be made available to the Advisory Board members as specified in section 4.2.

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The mandate of th r the duration of the project, starting on June 1st, 2020, and ending on May 31st, 2023