WP3: KPI, PILOT INNOVATIONS AND TEST SCENARIOS

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1- WP3 STATUS OVERVIEW

WP	Title	Start	End	YEAR 1											
				M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
WP3	**Data & Indicators definitions (research act.)**	**1**	**12**												
Task 3.1	Definition of KPI and KRI	1	3			D3.1									
Task 3.2	Setting of pilot cases	1	12						D3.2						D3.3

Task 3.1 – Definition of KPI and KRI CONCLUDED, however, KPI's list needs further discussion among partners

Task 3.2 – Setting of pilot cases, developing task 3.2.2 concerning test scenarios definition for each pilot case

Deliverables submitted: D3.1 and D3.2

2- OBJECTIVES AND DELIVERABLES

Main objectives

1. Defining KPIs
2. Setting improvements and innovations to be tested in pilot cases
3. Defining test scenarios for the virtual pilot cases

Tasks

Task 3.1 Definition of KPIs ☑

Task 3.2 Setting of pilot cases

- Task 3.2.1 Pilot innovations and improvements ☑
- Task 3.2.2 Test scenarios (due date: August'17)

Deliverables

D3.1 Study of the state of the art and description of KPIs of terminals, hinterland and mobility and rail network (M3) ✓

D3.2 Pilot innovations and improvements (M6) ✓

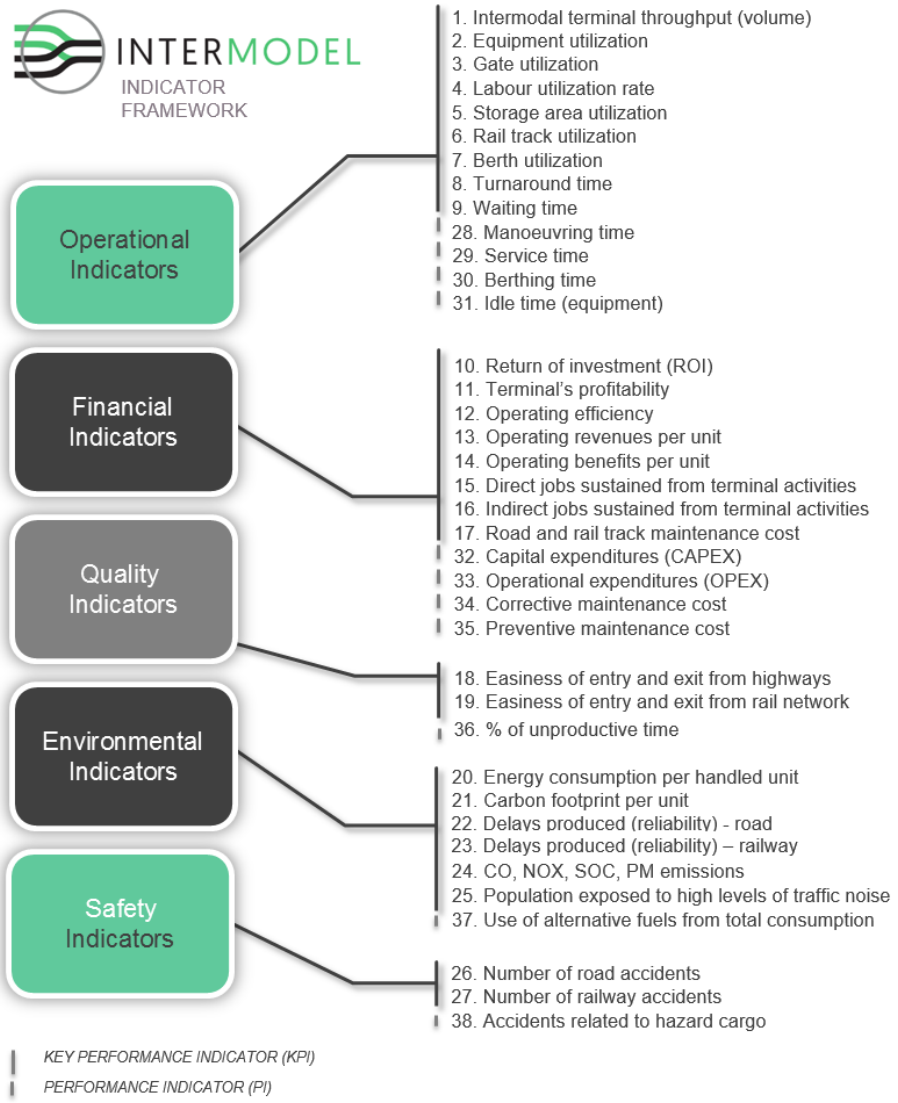
D3.3 Input data analysis and scenarios (M12)

3- WORK DONE

Task 3.1	Task 3.2
Period: M1 to M3 **Participants**: FGC, CENIT, IDP, CSI, DHL, MAC, VIAS, APSP **Objective**: Establish a set of Key Performance Indicators for the assessment of intermodal freight terminals through an ICT environment	**Period**: M1 to M12 **Progress report**: M1 to M6 **Participants**: FGC, CSI, IDP, CENIT, DHL, VIAS, APSP, BED, KIR, BASF **Objective**: Set improvements and innovations to be tested in pilot cases and define test scenarios for the virtual pilot cases **Subtasks**: -3.2.1 Pilot innovations and improvements -3.2.2 Test scenarios
Activities carried out: -Review of the state of the art -Collection of the most relevant indicators by each of the participants & Workshop in Melzo and La Spezia. -Template design for KPI and PI definition	**Activities carried out relative to subtask 3.2.1**: -Review of the improvements proposed by WiderMOS and OPTIRAIL projects -Questionnaire to partners and other stakeholders about innovations they plan to apply in their facilities and in daily operations. -List of innovations and improvements to be implemented in each case study
Deliverable D3.1 State of the art and description of KPIs – Due date 30/11/2016 SUBMITTED	Deliverable D3.2 Pilot innovations and improvements – Due date 28/02/2017 SUBMITTED

3- WORK DONE – RESULTS OBTAINED

List of KPIs according to 5 different performance dimensions and different stakeholder's point of view:



3- WORK DONE – RESULTS OBTAINED

TENDENCIES IN LOGISTICS

- Stricter rules regarding the environment impact and local emissions. Regulation regarding emissions for COx, NOx, but also for sound and light will become.

- Characteristics of the trains and train services will change in the near future:
  - Longer trains will be used. Currently the maximum length in most countries is 750 meters. However, the actual length in reality is (much) shorter.
  - The average weight of cargo (bulk and containers) will increase. This requires the use of stronger and heavier locomotives and terminal equipment.
  - New ways of scheduling and operating train services will be introduced, such as dedicated shuttle services and hub-and-spoke networks.
  - Train services will cover longer distances. An example of this is the new rail service between the Port of Rotterdam and several ports in China.

- Deep-sea vessels are becoming larger and larger to maximize benefits of scale economies. The same applies for barges in a smaller degree.

- Terminals are operating in global (or European) terminals networks. The activities of terminals that operate together in a network have to be optimized and aligned.

- Land and space are becoming scarce resources for terminals.

- More terminals are being bought by big terminal operators or investment companies

3- WORK DONE – RESULTS OBTAINED

List of innovations and improvements to be implemented in pilot cases:

Real pilot cases	Virtual pilot cases
La Spezia seaport terminal - New railway terminal design; - Extension and improvement of the CMP; - Improved maintenance scheduling (railway interconnection).	*Virtual pilot case 1* - Internet of things; - Alternative container design for bulk cargo – multi-purpose terminal; - LNG; - New materials.
Melzo inland terminal - Conversion of F3 warehouse into temperature controlled warehouse; - Implementation of a third gantry crane; - Four new shunting rail tracks; - Second gate in/out; - Improved maintenance scheduling (railway interconnection).	*Virtual pilot case 2* - Internet of things; - Automated and robotized equipment (automated cranes and AGV); - LNG; - New materials.

4- IMMEDIATE OBJECTIVES (NEXT 5 MONTHS)

Task 3.2.2 is to be finished in August 2017. For the next 5-month period we need to:

- Define the four pilot cases included in the project (La Spezia container seaport terminal; Milan-Melzo container dry port; virtual bulk-container seaport terminal; virtual bulk-container inland terminal).

INPUT DATA

- Define each of the pilot cases in terms of their different attributes;
- For virtual cases, scenarios set in terms of the future demand of the terminals;
- Historical data on demand analysis in both the real pilot terminals and a number of prognosis ranges on the evolution of the economy and the local logistic market;
- In virtual terminals, definition of expected overall capacity and railway connection; and setting different demand scenarios according to defined capacity (other attributes such as costs, technologies, etc. will be determined based on analogous terminals);
- In the same way, setting of different scenarios for the railway link (representing standard solutions).

DEFINITION OF PILOT CASES TO BE DESIGNED USING BIM AND INCLUDE ALL RELEVANT BIM DIMENSIONS

4- IMMEDIATE OBJECTIVES (NEXT 5 MONTHS): DEFINING EACH OF THE PILOT CASES IN TERMS OF THEIR DIFFERENT ATTRIBUTES

Partner	WP3 effort	What is expected
FGC	3	Leading Subtask 3.2.2. Demand scenarios. Scenarios for logistic market evolution. The rest of attributes (costs, available technologies, process times, climate conditions, …)
CSI	4	Future demand. Historical data and prognosis scenarios (Melzo&port la Spezia)
IDP	3	Coordinating Intermodel.Demand scenarios. Scenarios for logistic market evolution. The rest of attributes (costs, available technologies, process times, climate conditions, …)
CENIT	4	Demand scenarios. Scenarios for logistic market evolution. The rest of attributes (costs, available technologies, process times, climate conditions, …). Define models for obtaining KPI of terminals.
DHL	2	Demand scenarios. Scenarios for logistic market evolution. The rest of attributes (costs, available technologies, process times, climate conditions, …)
VIAS	2	Improvements in new materials and maintenance of terminals
APSP	2,1	Future demand. Historical data and prognosis scenarios (Melzo&port la Spezia)
BED	1	Define models for obtaining KPI of terminals.
KIR	1,8	Demand scenarios. Scenarios for logistic market evolution. The rest of attributes (costs, available technologies, process times, climate conditions, …)
BASF	2	Improvements in new materials and maintenance of terminals

5- CHANGES FROM ENVISAGED PLAN

- KPIs list needs further discussion, as difficulties in obtaining some of the indicators either from modeling or simulation can be found. In addition, too long list. The deliverable D3.1 will be updated as the project progresses.

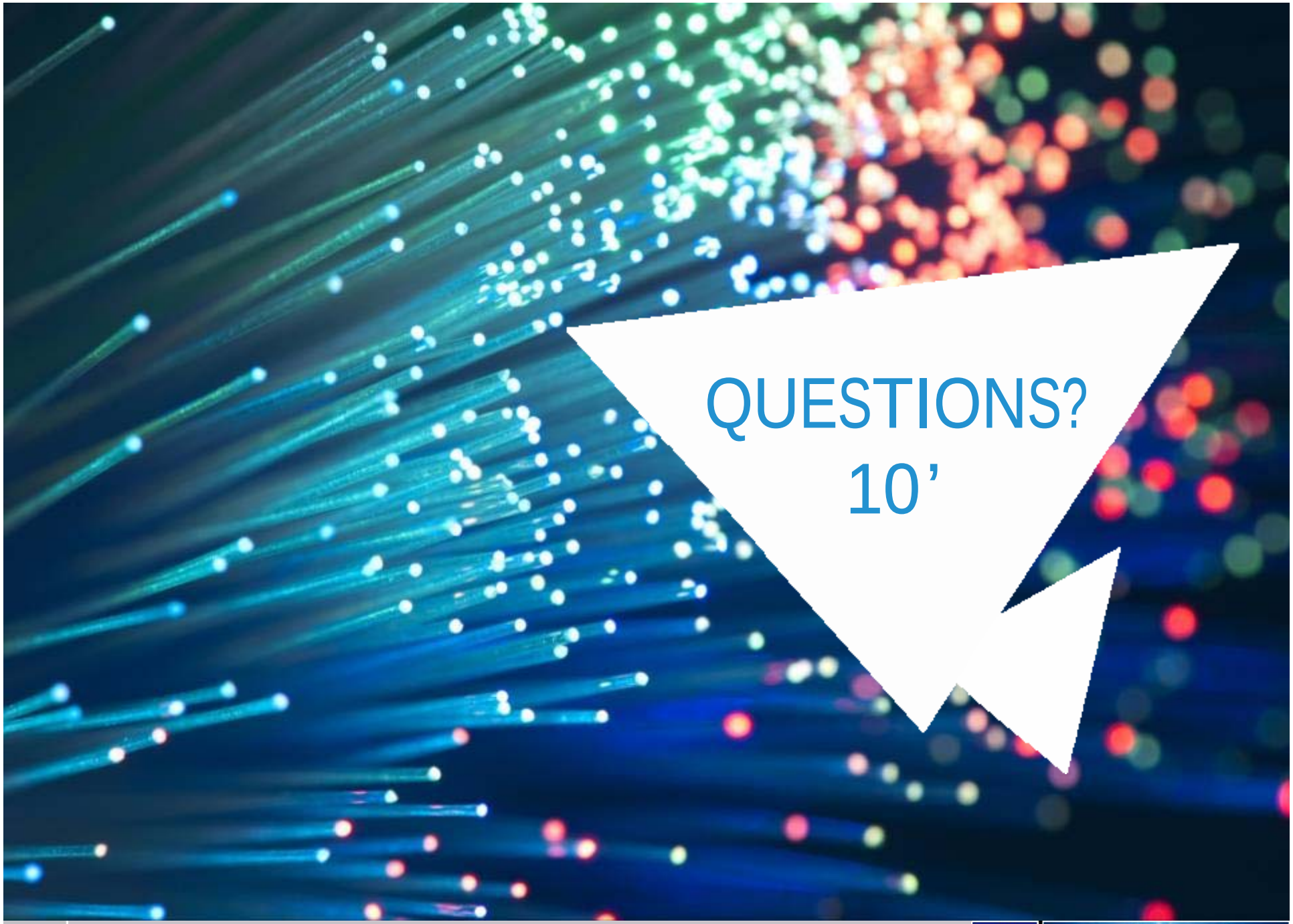
- Innovations provided by OPTIRAIL project need development of specific algorithms, the results are not transferable across different countries, and innovative solutions cannot be used due to IPR.

6- POTENTIAL RISKS AND OPPORTUNITIES

- Information from the real terminals, Melzo and La Spezia, need to be analyzed in order to set the different scenarios in subtask 3.2.2. Data needed:

  → Historical data on demand

  → Evolution of the economy and the local logistic market



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