



Physical Internet (PI)

DIGITALIZATION ITINERARY IN LOGISTICS

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INTRODUCTION

This Training Programme is a product of the DIGinLOGS project, co-financed by the European Commission in the framework of the Erasmus+ programme, KA2220-VET - Vocational Training Cooperation Partnerships. The output O1 "Training Programme" is to facilitate the acquisition of digital knowledge and competences for vocational training (VET) professionals in the logistics sector. This result 01 involves the development of the modules that make up the training itinerary defined jointly by the partners (01.2) derived from a report on the detection of the digital needs of the sector resulting from the qualitative and quantitative study of the partners' field (01.1).

Digitalization in the logistics sector in Europe and worldwide is key to the interconnection of global supply chain flows. The management of the company will develop in a modular way, with the physical internet coming to the fore.

Although different European programmes are oriented towards the digitalization of the sectors, the data collected in the partner countries of the project (France, Greece, Spain,) show the need to train teachers and trainers in digitalization in order to adapt to the training needs in digitalisation demanded by the companies.

The training programme is the result of the different phases of work carried out by the consortium since February 2022 of the project. The first phase included an international observatory derived from surveys to companies, teachers of educational centres, trainers as well as different focus groups carried out in all partner countries and a study provided by INYCOM on the digitisation trends of the logistics sector. A final report is prepared with all the results provided by the different partners. In this same phase, an innovative and futuristic itinerary has been defined in order not to be outdated when the different training actions are implemented. The itinerary consists of four modules to be developed:

1. Company management
2. Physical Internet
3. Supply Chain Digitalization
4. Analysis KPIs

Module			Unit	
n°	Description	Partner	n°	Title
M1	COMPANY MANAGEMENT	Action Sinergy	1.0	Module 1. Initial Chapter
			1.1	Digital Transformation and Strategy
			1.2	Composable Company
			1.3	Sustainable Networks
			1.4	Supply Chain Disruptions
			1.5	Module 1. Final Chapter
M2	PHYSICAL INTERNET	CIFPA	2.0	Module 2. Initial Chapter
			2.1	Physical Internet, Definition and Topics
			2.2	Horizontal Collaboration
			2.3	Systems & Technologies for Interconnected Logistics
			2.4	Global Supply Network Coordination and Collaboration
			2.5	Module 2. Final Chapter
M3	SUPPLY CHAIN DIGITALISATION	AFT	3.0	Module 3. Initial Chapter
			3.1	Management And Optimization of Information Flows
			3.2	It Solutions for Logistics Operations
			3.3	Converting Business Models to New Paradigms
			3.4	Evolution & Complexity
			3.5	Module 3. Final Chapter
M4	ANALYTICS. GLOBAL, MANUFACTURING AND LOGISTICS KPIs	INYCOM	4.0	Module 4. Initial Chapter
			4.1	Big Data. All Data Are Our Data
			4.2	Data Management
			4.3	Bi Tools
			4.4	KPIs. Definition And Design
			4.5	Module 4. Final Chapter

Once the itinerary has been defined, the structure of the training programme is agreed upon and the programmes of the four modules that make up the digitisation in logistics itinerary by the four partners, always trying to adapt them to the profile of the users that make up the target group to which the training actions are addressed.

OVERVIEW

Course Title

Physical Internet

Duration

30 hours of total work

Level

Level 5 EQF according to the European Lifelong Learning Framework

Prerequisites

Teachers and trainers of logistics sector

Objective:

The main objective of the course is to improve digital competence in logistics by knowing the systems and technologies of interconnected logistics.

The training program is available in four languages: English, Greek, French and Spanish.

The updated program to the training needs arising from the connection of the global supply chain is easily applicable in different contexts and types of organizations.

Competencies standard

The participant be able:

- To analyze the technological solutions that allow the interconnection of the different agents and check how they can have more accurate process maps that allow improving the manufacturing, storage, and transport times of goods.
- To know and analyze the horizontal collaboration techniques applicable to new environments to achieve the objectives of industry 5.0 (Gain cost efficiency, reduce emissions, improve service quality)
- To define the research and innovation paths that must be addressed to achieve (re)configurable supply chains in real time in (global) supply chain networks with ICT solutions available and affordable for all types of companies and participants. This is a key requirement for enabling a physical Internet and integrating it into an Industry 5.0 environment.
- To recognize coordination and collaboration concepts, such as automation, enabling improved performance across the supply chain, including internal and external logistics, asset management, supply and demand management, and full-cycle product management (Quote-to-cash)

Participant profile

After the training, the participant will have knowledge, digital skills that can be quickly verified and used in practice. It is based on a theoretical knowledge of new technologies and systems that facilitate the interconnection of logistics. It will provide a solid foundation for future activities related to digitalization in logistics both nationally and internationally. The participant will be aware of and familiar with the systems and technologies that facilitate the interconnection of logistics.

He/she will have technological tools, news and case studies, analysis, and predefined guidelines.

The participant will know how to use the system effectively and will be able to operate inside it. You will be able to apply the knowledge acquired to classroom teaching to future logistics workers. You will discover what challenges future workers in the sector will face and how to adapt using the digital skills shown in the training.

The participant will be able to apply the digital techniques and strategies learned in the activity.

UNITS

Unit 1 Physical Internet

Unit 2 Horizontal Collaboration

Unit 3 Systems and Technologies for Interconnected Logistics

Unit 4 Coordination and Collaboration of the Global Supply Network

LEARNING OUTCOMES

GLOBAL LEARNING OUTCOMES

The participant be able:

- To know all major information management technologies and their major functionalities, used by enterprises in the supply chain.
- To have identified the benefits and objectives of the logistics process.
- To determine how to build the right indicators and the digital means to collect the information for its implementation
- To connect operational indicators with sustainable objectives utilizing the right tools and information systems to support their analysis.

SPECIFIC LEARNING OUTCOMES RELATED TO UNITS

UNIT 1 PHYSICAL INTERNET

Competency standard Be able to analyze the technological solutions that allow the interconnection of the different agents and check how they can have more accurate process maps that allow improving the manufacturing, storage, and transport times of goods.

Learning Outcome Unit	
Be able to analyze the technological solutions that allow the interconnection of the different agents and check how they can have more accurate process maps that allow improving the manufacturing, storage, and transport times of goods.	
Knowledge	Skills
<p>The participant will be able to define the concept of the physical Internet as well as innovative solutions that enable the interconnection of the global supply chain (Production, Transport, Distribution).</p> <p>Physical Internet, the concept Objectives Reference projects Innovative solutions Product</p>	<p>The participant will be able to research, classify and analyze the up-to-date solutions related to logistics and business models of the companies that are best used throughout the supply chain and to end consumers.</p>

Assessment criteria

- a) The student defines physical internet and knows innovative solutions that allow the interconnection of the supply chain at each link in the chain have been distinguished.
- b) The student work process maps on to improve the efficiency of manufacturing, storage, and transport times.
- c) The student classifies different technological solutions to make the interconnection of the supply chain and the improvement of times and costs.

UNIT 2 HORIZONTAL COLLABORATION

Competency standard- Being able to address ways to gain competitiveness through collaboration and analyze results. Respond to the new challenges of e-commerce and comply with the growing number of restrictions in large cities. Be able to gain efficiency in terms of costs and reduce their CO2 emissions, improving the quality of service to customers.

Learning Outcome Unit

Be able to know and analyze the horizontal collaboration techniques applicable to new environments to achieve the objectives of industry 5.0 (Gain cost efficiency, reduce emissions, improve service quality)

Knowledge

Knowledge – Be able to meet the challenges faced by new collaborative supply chains from training in:
 Creation of collaborative projects
 Generation of work dynamics
 Cost reduction dynamics
 Talent retention
 Innovation

Skills

The participant will be able to research, analyze and integrate logistics projects

Assessment criteria

- a) The participant knows the different horizontal collaboration techniques and the environments to which they are applicable.
- b) The participant relates each technique to the objective that can be achieved in Industry 5.0
- c) The participant classifies the different techniques according to the different environments and the objectives that can be achieved with them.

UNIT 3 SYSTEMS AND TECHNOLOGIES FOR INTERCONNECTED LOGISTICS

Competency Standard – The objective is for the student to be able to define the research and innovation paths that must be addressed to achieve (re)configurable supply chains in real time in (global) supply chain networks with ICT solutions available and affordable for all types of companies and participants. This is a key requirement for enabling a physical Internet and integrating it into an Industry 5.0 environment.

Learning Outcome Unit

Be able to know the ICT solutions available to achieve a global supply chain for all types of agents.

Knowledge

The participant **will be able to learn** about the challenges faced by new supply chains in the areas of work of

- Artificial intelligence
- 5G for logistics applications
- Data exchange
- Digital twins
- RPA

Skills

The participant **will be able to identify** the specific solution, the target market, the state of development, the weak point that they believe could be solved through existing technologies and barriers.

You will be able to generate collaborative initiatives, as well as the key challenges addressed by this type of projects and the expected initiative or market solution.

Assessment criteria

- a) The participant learns about the different technologies to achieve supply chain security and resilience, as well as coordinated border management and end-to-end supply chain visibility.

- b) The participant identifies the specific solution available to achieve a global supply chain.
- c) The participant generates collaborative initiatives for certain key challenges that may arise.

UNIT 4 COORDINATION AND COLLABORATION OF THE GLOBAL SUPPLY NETWORK

Competency Standard: introduce coordination and collaboration concepts, such as automation, enabling improved performance across the supply chain, including internal and external logistics, asset management, supply and demand management, and full-cycle product management (Quote-to-cash)

Learning Outcome Unit	
Be able to know the collaborative techniques available to improve the performance of the entire supply chain.	
Knowledge	Skills
<p>The participant will be able to understand applied collaboration and its deepening that provides more scalable solutions and projects such as:</p> <ul style="list-style-type: none"> Reduction of empty kilometers Intermodally Change of transport models. Road to rail and water 	<p>The participant will be able to investigate the possibilities of supply chain collaboration to maximize the use of resources (vehicle capacity and infrastructure). Matching carrier demand with logistics services available in different modes and service providers</p>
Evaluation criteria	
<ul style="list-style-type: none"> a) The participant knows the solutions provided by the collaboration applied in the supply network. (Reduction of empty kilometers, intermodally, change in transport models) b) The participant investigates the possibles synergies that can be established between the different agents of the supply chain 	

PEDAGOGY AND METHODOLOGY IN THE COURSE

The courses derived from the Digitalization Itinerary in Logistics (PROJECT KA220- VET DIGinLOGS) are MOOC courses (Massive Online Open courses). All four modules have the same structure. They are divided into units and various pedagogical resources are used: Audiovisuals, Power Point presentations, links of interest, documents, tasks, and questionnaires. All tasks or case studies have their solution. They can be done at the pace desired by the participant; resources can be downloaded to be used in the classroom. At the end of the training action, you can download the badge of having completed the course.