Final report

DETECTION OF TRAINING NEEDS IN THE LOGISTICS SECTOR

Zaragoza, February 2023

CONTENT

INTRODUCTION

The DIGinLOGS project has as a global objective to create an Observatory at international level with our partners (AFT, Action Synergy and INYCOM) that develops a permanent function of prospecting and detection of training needs in the logistics and transport sector, so that the training given in our entities responds to a diagnosis of reality, to an analysis of the current and future needs of companies and workers.

This report is prepared, in a European context, to meet the needs and priorities of the labour market requiring higher levels of qualification; meet the demands of the digitization process; replenish the employment being generated by Europe's ageing workforce; the coexistence of high unemployment rates with a shortage of skilled labour in the logistics and transport sector with high levels of innovation. Adapting training to labour market needs will improve the competitiveness of our companies, the employability of our workers and effectively address the current skills mismatches in job supply and demand.

This requires a training system that accompanies students in their access, maintenance and return to employment. For this, the training provided in our entities must anticipate the needs of the productive fabric and constitute support for the innovative and competitive capacity of the company, based on quality human resources.

The report prepared by the Observatory of the DIGinLOGS project uses a methodology, which includes quantitative and qualitative research techniques, and whose main source is the information provided by representatives of expert logistics companies that have relevant knowledge of the labor market and by teachers or trainers for employment who carry out their function in this field.

In working with companies, several lines are worked: technologies used by companies, human resources (profiles most demanded by companies and training needs) and challenges of companies in the logistics sector.

This final report on the detection of training needs in the logistics sector is, on the one hand, the result of surveys, interviews and different focus groups aimed at teachers and companies in the sector that concerns us. And on the other, information is obtained from secondary sources.

Inycom provides its own study and three qualitative reports developed by the consulting firm Epicor in relation to the technologies used by companies for distribution, the digital challenges faced by companies, and the importance of data to know everything that happens internally in companies and throughout the supply chain.

Data have also been collected from secondary sources (Reports of the public employment services of the three partner countries.

Digitalization in the logistics sector in Europe and in the world is key to achieving the interconnection of supply chain flows worldwide. The management of the company will be developed in a modular way, putting the physical internet in the foreground.

Although different European programs are aimed at 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 to adapt to the training needs in digitalization demanded by companies and break with the digital divide that may arise with workers who are not trained in the new technologies that the company implements.

In this same phase, an innovative and futuristic itinerary has been defined so as not to be outdated when implementing the different training actions. The itinerary consists of four modules to be developed:

- Management of the company
- Physical Internet
- Digitization of the supply chain
- KPIS Analysis

Once the itinerary has been defined, the structure of the training program is agreed and the four partners write the programs of the four modules that make up the digitalization itinerary in logistics, always trying to adapt them to the profile of the users who make up the target group to which the training actions are directed.

The teachers interviewed and surveyed agree that the challenge in the classroom related to digitalization is that it is necessary to bring schools closer to companies. Companies evolve according to their needs and objectives. Large companies use applications designed specifically for them. Schools cannot access this software due to its high cost. It is necessary to access standardized digital tools. The perception of teachers is that there is a greater difficulty in accessing digitalization by small businesses. The greatest digital transformation occurs in large companies that can assume the high cost of digitalization. Teachers recognize the advantages of digitalization: Increase productivity The supply chain is integrated with e-commerce Time streamlining Traceability of goods Increases Applies to customs procedures Teachers also insist on the importance of specialized profiles in data analysis to transfer this analysis to managers for decision making.

Skills that will help you get more efficient workers

For the majority of teachers surveyed in partner countries, digital skills are what make logistics workers most efficient, followed by soft techniques and skills. (Digital skills 85% CIFPA; 90% AFT; 75%)

Hardware and software technology

The hardware and software that most teachers consider most necessary to improve the performance of the sector in the three countries are the management of the transport system (CIFPA 96%; Action Synergy 75%) and warehouse management (CIFPA 92%, Action Synergy 75%); improve flow management (AFT 70%).

Digital skills needed for future workers in the logistics sector

The professors consider that for future workers in the logistics sector it is important to understand the knowledge related to traceability (CIFPA 76%) Big data (CIFPA 71%), Artificial Intelligence, Internet of Things and cybersecurity.

Complements digital technologies to better adapt to digital transformation

Teachers need digital software that interacts with the supply chain (CIFPA 70.9%, Action Synergy 50%), omnichannel support technologies (CIFPA 69%; Synergy Action25%)

Resources to teach different topics of digitalization in logistics

Teachers need to teach different topics of computer logistics digitization and software. They plan to invest in software solutions that simulate the professional environment and integrate them into the course curriculum.

Topics that need more resources and materials

Teachers need to improve classroom performance of accessing applications and resources related to warehouse systems, route planning company management, cybersecurity, traceability and Blockchain.

Most relevant enablers for digital transformation success

Themost relevant enablers for the success of digital transformation are business management software (CIFPA 83.6%) and analytics data (CIFPA 61.8%; Action Synergy 75%)

A SWOT (Weaknesses, Threats, Strengths and Opportunities) on teaching in the area of Transport and Logistics has been carried out with representatives of the company and teachers. Four working groups are established, one for weaknesses, another for threats, another for strengths and another for opportunities at each table 10 people attend. The coordinators of the tables are representative of Operinter, Head of HR of Transportes Sesé, Rafael Merino doctor in sociology from the Autonomous University of Barcelona and professor of dual logistics of the Integrated Public Centerof the Links

Weaknesses:

- Outdated curriculum, due to the rapid evolution of digital transformation in the company.
- Lack of resources in schools
- Low level of digitalization of students
- Teachers far from professional reality
- Lack of an academic itinerary in logistics
- Teacher training far from the needs of the sector
- Lack of access to the computer applications used by the company
- Discredited vocational training
- Teaching staff stays in companies in the sector are not provided

Threats

- Teachers cannot go hand in hand with the vertiginous digitalization of the company
- Lack of coordination between the Educational Administration and the Company
- Lack of response from the company towards Dual FP (Training in Schools and in the company)
- Ignorance of the reality of the company by teachers.

Strengths

- Teachers' desire to adapt to change
- Possibility of distance training of teachers
- Relationship of teachers with companies thanks to training in workplaces and FPDual
- Commitment to FPDUAL

Opportunities

- Booming sector with high demand for human resources
- High percentage of labor insertion
- Common regulations of the European Union for recognition of the training carried out.
- Integrating digitalization in the classroom with simulation programs

CONCLUSIÓN FINAL

Due to the evolution of technologies in the last 10 years, the most complex fields of knowledge in teaching logistics students has been access to specialized software, business and warehouse management, automation, traceability, big data and flow and supply management.
Educational Centers do not have in the classrooms the software used by companies. It would be interesting if the classrooms had access to simple applications, which allowed students to adapt later, more easily to those specific to each company.

The students who are trained in Dual in the company, while studying the logistics cycle tells us that the applications depend on whether they are in a large company or in a small one. In the small ones sophisticated applications are not used and sometimes it is continued with Microsoft Excel and to plan routes the *Google Maps*.
In the large ones, we work with sophisticated ERPS and different software for warehouse management and route planners.

The logistics sector has become a strategic industry for the European economy, but nevertheless the lack of qualified personnel slows down the expansion of the sector. The logistics industry will face great changes in the coming years and therefore needs trained professionals to face the new challenges of using digital tools. Digitalization must be aligned with the strategy and add value to the business. The representatives of the companies highlight the importance of digitalization to improve processes. It provides business excellence, customer loyalty and brand positioning. Digitalization makes it possible to make decisions in real time. Logistics companies are committed to cybersecurity, the cloud and the most innovative technology. Large companies have software adapted to their needs: ERP, warehouse management systems, route planning, customer relationship and data analysis. Data management is important in all developments in the chain

Expert logistics companies tell us that things were predicted in 2030 that have already happened today. Vehicles that run on electric power, geopositioning and navigation systems. Applications for warehouse management and cargo and fleet management with real-time merchandise information. Centralization of stocks, outside peripheral warehouses. Customization and manufacture of the product according to demand. Short transit time. Errors along the supply chain are reduced to 0. Growth of the importance of reverse logistics and diversity in the form of payment.

PART I TECHNOLOGIES IN THE ENTERPRISE

Level of digitalization of companies in logistics operations

The level of digitalization of the logistics operation depends on the size of the companies. Large companies have specific software for business management, warehouse management and *Business Intelligence* with assisted data analytics.

Most used digital tools

The most widely used digital tools are the integrated management system and the warehouse management system (CIFPA 76%, Action Synergy), as well as applications for route optimization.

Purpose of digitization

The objective of digitalization in most companies is to improve their management, quality and efficiency, integrating new technologies into all processes to better analyze data and make better decisions.

Areas where you make the greatest effort for your digital transformation

The area in which logistics companies make the greatest effort to digitize is for all partner countries the warehouse management system (CIFPA 70.6%; Action Synergy; 100% AFT 50%) followed by supply chain integration with customers and suppliers for Spain and Greece (CIFPA 58%; Action synergy 50%) France considers cybersecurity as a second area (AFT; 42%).

The present and future idea is to connect the management software with the other applications and that all the data is in the cloud, to be analyzed and make good decisions.

Professional skills

Digital skills need to be strengthened in all jobs, regardless of their professional category in the logistics sector, followed by technical and managerial skills.

Key technologies are essential for digital transformation.

From the reports worked on at the observatory, it can be deduced that there are six key technologies for digital transformation:

E-commerce

As e-commerce technology enables digital transformation, this technology is a good first step for distributors to consider at the beginning of a digital journey. By taking your business online, you now allow customers and prospects to view, select and purchase products online. With this step into ecommerce technology, they can quickly transform their presence to include a web presence that is not just a website, but an entry point for customers to interact with.

E-commerce opens up a new and more convenient way for you to interact with your customers, who are increasingly moving away from traditional ordering methods, using features like customer portals.

Cloud

How cloud technology enables digital transformation, using cloud-based software makes services and applications available to users on demand through online servers, rather than being provided from your company's on-premises servers. For example, when your ERP system is built on and delivered through the cloud, your digital journey accelerates because you can run and grow your business without having to worry about the key issues plaguing systems deployed on-premises, such as upgrades including cumbersome customizations, a server upgrade. Moving to the cloud is a big step

toward digital realization because technology providers can move Seamlessly close on-premises systems to an agile, flexible, on-demand cloud infrastructure, all on a clearly defined timeline. This movement is no longer an insurmountable obstacle. It can be addressed in stages to put you on the path to scaling an IT investment for real business returns. Your IT resources can be dedicated to moving from a static technology environment to a technology ecosystem that provides business insights and action to keep your customers happy.

Enterprise Content Management

How enterprise content management enables digital transformation.
Enterprise Content Management (ECM) makes managing your company's documents easier, faster, more consistent and more controllable. Documents and files that used to be unstructured are now centrally stored and made available to your employees and customers. You can rest easy knowing that the latest versions are always in use. It is important to reduce paper documents, control versions, and locate files.

Data analysis and visualization

Data analysis and visualization help free teams from the routine of data collection and static reporting. This technology, which can be fed directly from ERPs, brings numbers to life through dynamic reporting and compelling visualizations that help proactively pay attention to revenue, expenses, and other KPIs that matter. In an industry like manufacturing that has remained the backbone of economies around the world for centuries, change has always been a constant. After all, transformation is at the heart of manufacturing, using the world's resources and raw materials to create objects that are more valuable than the sum of their parts.

In nearly every industry, data and analytics have changed the way business is done in ways that don't yet seem possible. It has changed the way publishers distribute information, the way banks buy and sell assets, and the way advertisers reach new

audiences. The three types of analytics are: descriptive to better understand why things happen in business; Diagnostics, reveals key errors that need to be corrected. ; predictive, shows what is likely to happen in the future.

Smart shipping

How Smart Shipping Enables Digital Transformation

Smart shipping technology is another way to venture into your digital journey. It enables you to process shipping transactions faster and more efficiently, which is critical when the pace of order fulfillment grows every day and sales happen faster than ever.

When the shipment is integrated with your ERP, details are automatically extracted, shared with carriers via the web, and freight charges and tracking information are estimated. All of this automatically appears in the ERP systems in real time, allowing them to process any shipment using any licensed carrier, all from the same screen. It results in a significant reduction in errors associated with manually taking operator data to your ERP system. And finally, if integrated, all this triggers automated billing of freight charges. The most important end result is that company employees are better equipped to handle inquiries from customers waiting for deliveries, transforming the way they serve their customers.

Electronic data interchange

Electronic data interchange (EDI) is a set of standards that defines common formats for information to be exchanged electronically between two organizations doing business together, or "business partners." It allows companies to speak the same language electronically and communicate more efficiently to be digitally connected.

EDI eliminates paper-based processing and manual processing, and the inefficiencies that come with it, by automating the electronic flow of information in formatted data

packets. It has become a global standard for the exchange of information between trading partners.

Documents exchanged through EDI can include invoices, purchase orders, advance shipping notifications, student transcripts, healthcare claims, and many more. When considering EDI technology, a distributor is no longer on an island; It is established in a supply chain.

PART II HUMAN RESOURCES

Labour market information: trends and forecasts

According to the experts' forecasts, the trend isemployment growth in the occupations of this professional family.
The boom has been driven mainly by e-commerce, ICT sales and food trade. In relation to these activities, new occupations and new profiles are generated

Training level

The level of training required in almost half of the job offers analysed is higher vocational training, followed by intermediate vocational training. • In this sense, the vocational training qualifications of administrative management technician, higher technician in transport and logistics and higher technician in international trade are the most required. The university degree does not have a representative weight among the requested training. • In turn, specific knowledge in ERPs (SAP and Navision among others), COMMERCE platforms, ADR (Dangerous Goods) are valued, as well as specific knowledge in customs and waste, as well as export, transport, safety, dangerous goods and prevention of occupational risks.

Language is one of the most repeated requirements among the various job offers analyzed, especially English, demanded in six out of ten offers. • Five out of ten offers request applicants with office automation skills in word processor, spreadsheets and presentations, of which most must have advanced knowledge. Skill in email and instant messaging is also required for these types of job openings. • With majority character, the minimum experience required is 1 or more years and only one in ten offers do not require previous experience. Immediate incorporation is one of the requirements demanded in several of the offers, as well as telephone availability.

Experience

In most occupations experience is required, although the period required differs greatly. In occupations belonging to the most qualified occupational groups, experience is required and for periods of around two years or more. On the other hand, in groups occupations with a lower level of qualification, the most common is that experience of shorter duration, less than six months is required and, in some cases, this is not necessary, although it is recommended. In most occupations, as can be seen in the profiles defined in this report, commercial experience is required, in orientation to achieve objectives and in customer service.

Filling vacancies Vacancies in occupations are filled in their entirety, although with a different degree of difficulty and number of days depending on the specific occupation. Occupations of medium or low qualitative level are easily covered, and in a period not exceeding 15 days; On the contrary, the difficulty is medium or high in higher level occupations.

Mobility

The occupations of this professional family present possibilities of mobility with alternatives of entry and exit always within the commercial sector.

General profile

They highlight a general profile of the logistics sector, in which social, soft, leadership and digital skills are required. Knowledge of languages is also important in intermediate and senior positions.

Jobs with the highest job offer in the sector:

Delivery people, forklifts, Preparers, port personnel, planners, logistics managers, Inside Sales Executive, Supply Chain Director, Traffic Managers, Warehouse Managers.

It is necessary to create qualifications related to lower-level positions and train them, then promoting internal promotion. These profiles need to be improved in terms of skills, competences and ambition. The sector demands complementary training, specific to the sector, to the academic (Vocational Training and Master). It is necessary to change the mind to digital, technologies are advancing continuously, you have to learn to use new technologies to be able to adapt to any change that occurs.

Most demanded profiles of the Sector.

As a result of working with companies, it can be deduced that the most demanded profiles in the sector are:

Warehouse manager.

- Functions. Lead the team, manage inventories and plan the strategy.
- Skills: directive, organizational, interpersonal, leadership, languages and digital.

Sales Executive

- Functions. Market the services of the company and search for customers. Follow-up of the commercial accounts of the assigned clients, keeping the data updated.
- Skills: communication, negotiation, results orientation, digital, supply chain training

PLC Programmer

- Functions: Design of control and operation programs for automated machinery.
- Skills: communication, digital and soft skills.

Warehouse waiters and forklifts

- Functions: Help send and receive unloading trucks and register incoming and outgoing goods.: Prepare orders by processing requests and send them to the area in charge. Classify and place materials or items on racks, shelves, or in containers according to organizational standards. Carry out physical inventories of the existing goods in the warehouse.
- Skills: soft skills, digital.

Commercial Director.

- Functions: Direct, manage and supervise the activities of sales representatives and sales personnel and establish incentives by goals. Supervise the selection of marketing and sales personnel and monitor their performance.
- Skills. Strategic vision, customer orientation, negotiation, communication, leadership and languages. Digital knowledge and data analysis.

Strategic Vision Director,

- Functions: Define action plans aimed at the development of new key skills for senior managers both in individual and team activity, which involve changes and improvements in the company in terms of leadership style and performance.
  Regularly review and update the company's core strategy, including progress in achieving key strategic action plans.
- Skills: Customer orientation, negotiation, communication, leadership and languages. Digital skills, training or supply chain experience. Knowledge of export or import regulations of head, speed of response, organization, languages, interpersonal treatment, digital skills

Data Analyst

- Functions: Extracts analyzes and presents information to managers for decision making
- Competencies: customer orientation, rigor, communication, languages and digital skills

Traffic Manager

- Functions: Customer service, tracking of orders and deliveries, transport treatmentand process monitoring, knowledge of cargo exchanges, resolutionof incidents, communication with suppliers.
- Skills: results orientation, team management, communication, digital skills and supply chain training or experience

Expert in business intelligence.

- Functions: Analyze the dynamics of data so that the company can optimize its stock, retain customers, attract new customers, detect and correct budget deviations, among other objectives.
- Competences. Planning, decision making, responsiveness, communication, digital skills

Supply Chain Manager

- Functions: Direct or coordinate production, purchasing, warehousing, distribution, or financial forecasting services, or limit the cost of activities and improve accuracy, customer service, or security. Examine existing procedures or opportunities for streamlining activities to meet product distribution needs. They direct the movement, storage, or processing of inventory. .
- Competences. Communication, negotiation and digital skills management. Multidisciplinary, training and experience in the sector.

Ntraining ecesidades in Logistics

The needs are defined by distinguishing between the training that is necessary to acquire technical skills, in information and communication technologies and transversal (languages, office automation, legal and financial knowledge) in the area of logistics and transport.

1. Technical Competencies

- Supply and management of goods and losses.
- Computer applications for production management (MPS).
- Computer applications for the management of goods from the point of sale.
- Logistics audit.
- Knowledge of mobility restrictions in cities.
- Control and optimization of routes. Design of logistics networks.
- Logistics diagnosis of processes.
- Strategic design in logistics operations
- Distribution and logistics.
- Circular economy; sustainability.
- Warehouse management and related software.
- Management of motorized and manual forklifts.
- Management of conflicts, incidents, complaints and suggestions in the service.
- Waste management.
- Management of ecological and sustainable vehicles.
- Cash management and handling.
- Management and optimization of transport fleets.
- Skills, strategies and techniques related to management and applications used in the delivery of goods (Tablet, mobile, PDA, POS or other supports).
- Customs information relating to postal consignments.
- Baggage shipment locators.
- Urban logistics. Integral logistics. Reverse logistics.

- Management of barcode readers.
- Methods and techniques of storage and warehouse organization.
- Organization and planning of freight traffic.
- Stowage and unloading operations
- Digital platforms contracting.
- Warehouse budget and cost deviations.
- Selection and placement of loads.
- Warehouse management systems (WMS).
- Identification systems KPI Program (Key Performance Indicators).
- Logistics organization systems (ERP) and EDI data exchange systems.

2. Information and communication technologies.

- Automation of administrative processes.
- Computer applications for order forecasting (FORECAST analysis, BACKORDER).
- Applications for the management of distribution and computerized monitoring of products.
- Communications, networks and systems.
- E-commerce. Electronic invoices. Collection platforms.
- Knowledge and management of statistical packages (SPSS...)
- Quality control in digitalization.
- Development of web pages.
- Call center technology management.
- Management of services in the computer system.
- Programming languages (JavaScript and Php).
- Web languages (CSS and HTML). - Baggage shipment locators.
- Dataphone management.
- Management of barcode readers.
- Operation of new self-guided vehicles (AGU).
- Management of point of sale (POS) terminals.

- Management of radio frequency terminals.
- Management and use of Personal Digital Assistant (PDA) devices.
- Marketing de buscadores: SEO (Search Engine Optimization) y SEM (Search Engine Marketing).
- Planning and maintenance of local area and metropolitan wireless networks.

- Procedure or protocol in case of communications failures.
- Social networks and networking. - Network security and ethical hacking.
- Warehouse management systems (WMS). Business and warehouse management software.
- Planning Systems SAP, APO, SNP, DP. - Global Positioning Systems (GPS).
- Own computer systems (SGIE) Supervision, organization and management of the assembly of telecommunication infrastructures and voice and data networks in the building environment.
- Trazabilidad (RFID).
- Automated processing of shipments.
- Use of the web in the process of sale and development of the activity.
- Use of logistics and data analysis software.

3. Competencias Transversales

4. Languages

Language proficiency requirements decrease according to the qualifications required in the selected occupations.

- English: Listening (B), Reading (B), Oral Interaction (B), Speaking (B), Writing (B).
- French: Listening (B), Reading (B), Oral interaction (B), Speaking (B), Writing (B).
- German: Listening (A) / Reading comprehension (A) / Oral interaction (A) / Speaking (A) / Writing (A). *(A) Basic User / (B) Independent User / (C) Proficient User

5. Office automation and ICT

- Collaborative work applications (Advanced).
- Audio editing applications (Advanced).
- Search and evaluation of information on the Internet (Advanced).
- Cybersecurity and data protection (Advanced).
- Email and instant messaging (Advanced).
- Identification of technological needs and responses (Advanced).
- Organization and retrieval of information (Advanced).
- Office automation: word processor, presentations, spreadsheet and database (Advanced).
- Technical troubleshooting (Advanced).
- Digital image processing (Advanced).

6. Financial Literacy

- Preparation and budgetary control.
- Basic accounting: expenses and income.
- Means of financing.
- Means of payment.

7. Legal Knowledge

- Foreign trade and customs.
- Creation of microenterprises and regulations to establish themselves as self-employed.
- Waste management.
- Hygiene and food safety.
- Commercial legislation.
- Labor legislation and human resources management.
- Dangerous goods legislation. - Data protection legislation.

- Law on the Legal Regime.
- Quality standards and systems (Order processing and receipt of goods).

The population working in the sector is considered to have a very high average age. Scarce manpower. The lack of attractiveness of the logistics sector is highlighted.

Employment prospects with new logistics trends

Digitization: a slow but necessary change

The digitization of the supply chain is underway within companies.

It favors automation, connection and collaboration throughout the chain with the aim of optimizing service and reducing transport and storage costs.
With the digitization of points of sale and the expansion of e-commerce, profound and lasting changes are taking place to make the customer journey smoother and more reliable between home, mobility in the city and the point of sale. To achieve this, logistics tracking systems have been developed. They offer the consumer the possibility to follow the route of a package in near real time by entering the shipping number in a specific interface.
The digital transformation of the Supply Chain benefits the Purchasing function; Improves equipment efficiency and detection of sources of savings. It has also resulted in a number of new jobs, in particular the post of Master Data Administrator. Its function is to master the data of the article and the client with the objective of control, consistency and cleanliness. This function involves being a proposal force in order to optimize tools and processes.

The logistics of the last mile, or the last meter

Companies are moving away from last-mile logistics to last-meter logistics: a logical continuation of the 4th industrial revolution with "tailor-made" and "just in time". The carrier is acquiring a new dimension in the value chain, becoming a partner and approaching customer expectations.

Urban logistics is becoming the new epicenter of the sector. Transportation plans become flexible and evolve in real time. The work is increasingly dense to get closer to the client; We are seeing the advent of autonomous transport, an evolution of functions and a diversification of delivery points (e.g. offices/relay points/checkouts). The mix of transport modes is also necessary to achieve this performance (bicycle, public transport, new generation of clean vehicles that work, for example, in their complementarity with rail and river transport).
This new logistics is seeing the emergence of warehouse centers that are getting closer and closer to cities and is creating numerous jobs, from clean car drivers to ultra-versatile stock managers. To define increasingly complex strategies, transportation managers and executives are becoming prime contractors.

Uberization of freight transport

These two basic trends inevitably lead to the uberization of freight transport. In other words, the connection between the carrier and the shipper through a web interface without any other intermediary. Imagine, through an app, the solution geolocates available trucks in real time (for example, a truck that has just left its cargo and must leave it empty) and offers companies to load them to ship their goods. This evolution of the value chain has a double objective: to meet ecological challenges (respect for the environment) and economic challenges (cost optimization).
This kind of approach already exists for last-mile deliveries. We can also imagine that this type of service could be provided very soon by VTC drivers between two trips.

Impacts on supply chain professions

These market developments continue to have an impact on the Logistics and Transport professions, which continue to grow in power and now occupy a central position in companies. It is now common for supply chain managers to sit on management committees where their ability to strategize and manage internal and external constraints is assessed.
With the emergence of new technologies, many highly operational jobs are affected by robotization. Warehouses, for example, are becoming increasingly digital (scanning,

platforms, drones) and there is less need for certain "field" jobs, such as forklift operators. On the other hand, management positions, such as team leaders and operations managers, are increasingly in demand. Driven by this favorable context, increasingly oriented towards optimization and innovation, new skills are expected; Multifunctionality, the ability to evolve in an international and multicultural environment, mobility and the ability to federate virtual teams are the keys to success. We also observe at all levels of the supply chain a phenomenon of hybridization of professions: the profiles sought today have a double competence, for example, the carrier must also have competences in customer relations.
The supply chain of the future tends to be collaborative, integrating customers but also suppliers for an optimized duo of effectiveness and efficiency.

Workers' perception of technology

It is necessary that talent knows how to use new technologies, from the highest to the lowest categories. New technologies such as RFID, voice picking, intelligent warehouse automation. The power of technology supports all roles in the chain, they consider that the use of technology has been useful for the better performance of their jobs, but 50% fear that their jobs will be replaced by artificial intelligence. They see how technology improves work, but there are fears that existing jobs will be lost. There are people who don't seem capable. Training is necessary for workers to meet the challenge of digitalization. The Administration must help citizens in the challenge of digitalization.

PART III. DIGITALIZATION CHALLENGES IN LOGISTICS

Challenges in the logistics sector

At the international level, the great challenges of logistics can be grouped into four: Cloud-enabled technology; creation of various software to serve the customer; sustainability and digitalization of workers.

Cloud-enabled technology

Supply chain problems that began during the pandemic persist, leaving manufacturers struggling to find and certify new suppliers, often with higher prices. The implications associated with production downtime, missed deliveries, and additional raw material costs are forcing most manufacturers to get creative with supply chain management. In fact, 71% are redesigning supply chains with technology and 58% are growing their supplier base. To survive logistical challenges, you must be agile and use technology to forecast trends and adapt quickly to changes. The ability to nimbly procure materials from multiple sources, accurately forecast, and adjust plans to reduce downtime and meet obligations is vital. You need to be able to operate and do business online with cloud-enabled technology to serve customers wherever they are.

Software to serve customers around the world.

The global economy is expected to double in size within a few decades, driven by emerging economies that could, on average, grow almost twice as fast as advanced economies. Companies will need to understand how to serve new markets, operate within their borders, and build supply chains that reach customers around the world. To operate in a global market, you need to focus on the customer and understand what they want based on where they are. Software with multi-currency capabilities is critical for vertically specialized and service-oriented manufacturers. It can also help you establish yourself in new markets and stand out from your competitors.

Sustainability

The conversation of companies around the world to reduce carbon dependence is ongoing. Low-carbon manufacturing affects every step of the value chain, impacting smart factories and digital supply networks. "Those who fail to act will be left behind, and [are] at risk of sanctions from regulators, investors or customers as calls for higher standards and transparency grow. Although the goals to achieve a higher degree of sustainability in manufacturing have waxed and waned, the need for sustainability is here to stay. Many states in the United States already require manufacturers to adhere

to stricter environmental standards. To address this, it must be innovative in its approach and adopt technology that provides data-driven insights that regulators and consumers will increasingly demand.

Digitalization of workers

Manufacturing will continue to experience the challenges of a shrinking talent pool and tight job market. There may not be enough skilled workers to do the jobs of the future. Today's smart factories need workers who are technologically agile, from mentoring robots to manufacturing parts. As manufacturers adopt new technologies, a talent gap is created:

To compete in this tight job market, you need to provide resources for your employees that help them increase collaboration and efficiency, including working on technology that allows flexibility and remote access. Using technology to automate tasks can also help with work problems and free up critical resources for functions that add greater value to the organization.

Challenges of Digitalization in Logistics.

Companies consider as challenges of digitalization, excellence in logistics, in achieving an integrated supply chain and as a result business excellence; achieve customer loyalty, and achieve greater trust in the company and brand positioning

The biggest challenge today and in the future of digitalization in logistics is the management of information both internally and externally. It is necessary to sensitize the entire operative of the importance of the data. It is important to automate warehouses with inventories with RFID or with the Internet of Things.
Tools used in the digitization of logistics companies: ERP, digital communication with the user (text message, via whatsaap, self-management via website) route

optimization applications and big data. Automated warehouses with radio frequency installations with shelves or vending machines to supply products, automatic order management connected to the ERP; Direct connection platforms to the client, such as EDI. You want to connect software from different areas and processes (WMS, Route Planners, EDI) with ERP and all in the cloud.

Another challenge that cannot be forgotten today is the desire of companies, administration and citizens to put all global technology solutions (cloud, big data, ERP, digital simulations ...) at the service of sustainability to reduce emissions and create sustainable networks with data analysis.

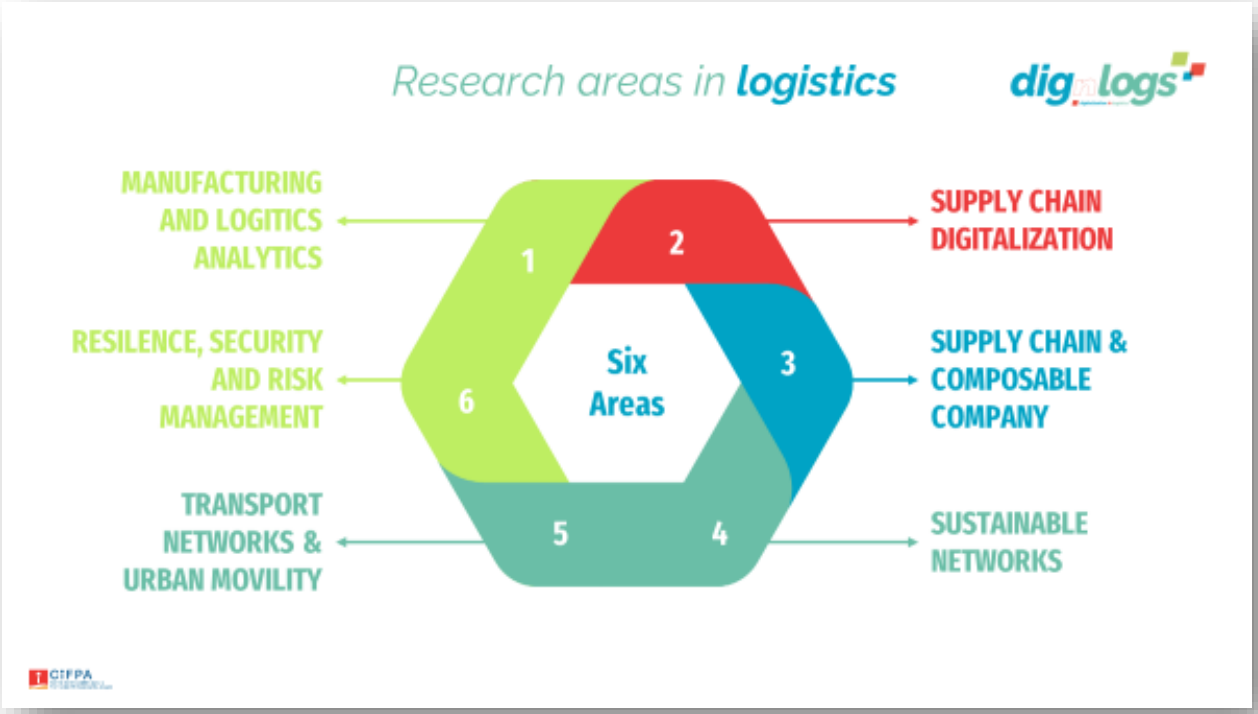
Short-term logistics trends

In the next years, companies will bet on new technologies, to maintain competitiveness and streamline processes, limiting mistakes.

- Warehouse simulation: the virtual representation of the processes simulates how the merchandise flows will be in the Warehouse.
- Logistics flexibility: having flexible logistics processes guarantees the availability of stock for the client.
- Robotic process automation. RPA technology automates repetitive tasks and controls the shipping status of orders
- Data mining: automatic pattern detection reveals useful information to improve logistics operations.
- Cloud Computing: digitizing logistics with cloud software saves costs on infrastructure and maintenance.
- Drones and logistics: using drones for deliveries and inventory management could gain momentum in 2023
- Environmental logistics: companies are committed to using electric vehicles, strengthening collection points or using biodegradable materials

Future logistics, from global to urban, will be based on **a global open system of systems** that allows assets and resources to be interconnected in logistics networks, facilitating their use at maximum capacity and productivity, while increasing the agility and resilience of supply chains. We call this vision the Internet of Physics (IP) and it will support the affordable transition of assets to zero-emission logistics.

To design the training itinerary of the DIGinLOGS project, six research areas are based.



1. *Manufacturing And Logistics Analytics*

This area of research focuses on addressing operational decision-making issues focused on examining plant control management technologies to improve

operational performance. The application of business analytical tools to understand and leverage empirical and formal connections between business drivers in the supply chain provides opportunities to create new insights to examine the effects of new supply chain enablers, as well as generate new theories that explain these connections. The application of quantitative tools in production environments seeks to bridge the gap between problems in the use of information technology in the supply chain, for example, the management of real-time data to improve the performance of pull, push and hybrid production systems.

2. *Resilience, Security and Risk Control*

In recent years, supply chains have become more globalized and therefore more vulnerable. It was after 9/11 that governments and practitioners became more aware of the fact that supply chains could be compromised by security risks, such as theft, counterfeiting, as well as terrorism-related risks or natural hazards. There are differentmethodologies for risk management,risk-based approach to supply chain management and supply chain methodsthat integrate risks and security controls as well assupply chain and resilience constructions.

3. *Digitization of the supply chain*

The digitization of information and the application of advanced innovative technologies present the opportunity to drive business value throughout the supply chain; Companies need to move from linear and sequential supply chains to an interconnected and open system of supply operations. Companies will have to break down their organizational silos to interconnected digital networks.

4. *Sustainable networks*

It is moving towards a truly integrated transport system as the vision to achieve significant progress in terms of efficiency, effectiveness and sustainability of freight transport and logistics, creating value and adding competitiveness to all manufacturing and retail sectors in Europe.

The ambition is to achieve co-modal transport services across the EU within a well-synchronised, smart and seamless network, supported by corridors and hubs, providing optimal support to supply chains. It implies a radical change from the current system, towards the definitive vision of the physical Internet, through the synchronization of intermodal services between modes and with chargers with different speeds and delivery times (called Synchromodality), aligning equipment and services in corridors and centers and integrating them into networks. (https://www.etp-logistics.eu/roadmaps-3-2/corridors-hubs-and-synchromodality-2/)

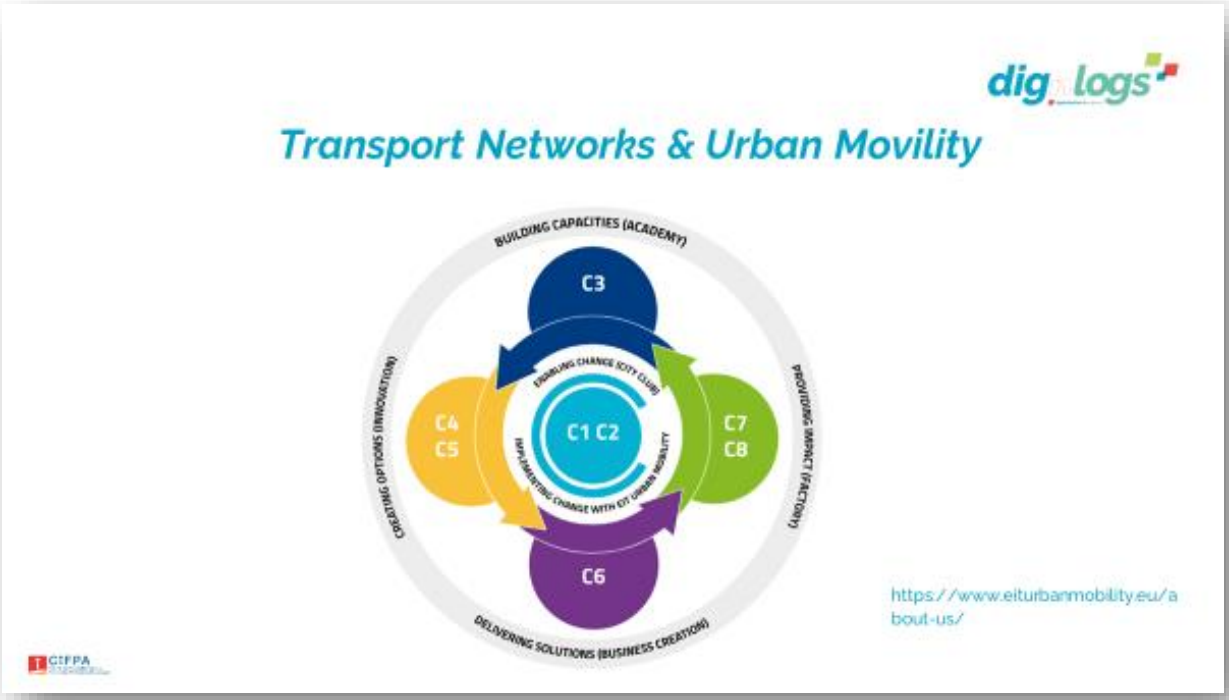
5. *Supply Chain and composable company*

The composable business idea operates on four basic principles: More speed through discovery; Greater agility through modularity; Better leadership through orchestration; Resilience through autonomy

6. *Transport Networks and urban mobility*

Urban mobility is always under pressure. Future challenges ahead include growing urban populations, how to build and maintain infrastructure, the economic and environmental costs of congestion, demands for greater accessibility and safety, and the question of how to improve air quality. Based on a comprehensive analysis, eight social and urban mobility challenges are addressed: Achieving sustainable urban growth; decongesting our transport networks; growth

of interdisciplinary talent; Eco-efficient and safe transport of persons and goods, including waste:Data exploitation; Boost the competitiveness of the mobility industry); shape the framework for regulatory and behavioural change and)Urban governance. (https://www.eiturbanmobility.eu/about-us/



Of these six areas defined by the needs that arise in the European environment, the following training itinerary is defined by consensus by the four partners.

Module D1	Company Management • Digital Transformation and StrategyComponible Company (Modular)Now. Sustainable networks2Supply chain disruptions

Module D2	Physical Internet • Definition and themesHorizontal collaborationSystems and technologies for interconnected logisticsGlobal supply network coordination and collaboration	
Module D3	Supply Chain digitalization • Products of the new era. Code-free technologiesIT for interconnected logisticsITaas. IT systems for urban logistics	
Module D4	Analytics. Global, Manufacturing and Logistics KPIs • Big Data. All data is our dataData managementBIKpis tools. Definition and design	

F UENTES USED

This report is the result of the following sources:

1. Primary sources: surveys and *focus groups* that the partners have carried out with companies and teachers of vocational training in the logistics field in the partner countries. (Companies. Picolyn,, Grupo Sesé, Grupo Carreras; Walter Martinez; Aragon Innovative Logistics Association; Educational Centers: Integrated Public Vocational Training Center Los Enlaces, *Zaragoza Logistic Center*, School of Work of Lleida). Dual FP students CPIFP Links

2. Secondary sources contributed to the project by INYCOM

   - https://www.eiturbanmobility.eu/about-us/
   - https://www.etp-logistics.eu/
   - EPICOR Reports " the supply chain of the future. Megatrends." . "Technologies that transform distribution" "Data and analysis. The next frontier for manufacturing"
   - MECALUX Report "7 Logistics Trends for 2023"

3. Official secondary sources

   - Report of prospection and detection of training needs of the observatory of occupations of the public employment services.
   - Prospective Observatory of Occupations and Qualifications in Transport and Logistics
   - Diagnosis of the labour market needs of the public employment service in Greece.