



FULL DIGITALISATION

AN OPTIMISED SUPPLY CHAIN



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Due to process characteristics and complexity, freight transport faces many challenges during day-to-day business; specifically, logistics operators are currently facing several challenges such as increasing cargo volumes and security demands that put additional burden on them.

Technologically wise, the Internet of Things paradigm applied to the transport and logistics sector allows freight to be sensed and controlled remotely, with logistics operators able to automate and digitalise their operations. These enabling technologies disclose enormous opportunities in defining new processes, improving efficiency and gaining a competitive advantage by creating a seamless fully digitalised supply chain, where the single node or the single operator is seen as a part of the entire corridor.

NEED FOR VISIBILITY

In the epoch of a rapidly evolving global economy, one of the most eminent positions is dedicated to logistics, in the base of which lie myriad supply chains across the world. In such a context the catchword is “visibility”, that provides a

clear image of where inventory, vehicles and goods are in any moment. First, it is an “in-transit” visibility, which shows all movements of inventory/vehicles from origin to final destination. Obtainment of complete supply-chain visibility is no easy feat, especially when you deal with geographically scattered partners that use different IT systems to collect, transform and analyse data in a different way for a different purpose.

Currently, more and more companies are trying to cut out disruptions from their logistic processes in order to establish the seamless functioning of all elements in their activity. The less disruptions a company has, the more successful, flexible and quick it becomes. By digitalising procedures and using smart devices, such as the Internet of Things (IoT) components (tag, electronic seals, etcetera), companies may exploit supply chain visibility as a considerable competitive advantage because it gives a possibility to plan the strategic steps in an attempt to defy competitors. Moreover, demand is managed better in order to reduce inventory levels, client requests are satisfied more quickly and in a more

accurate way, and the demand variation is handled more effectively. Visibility of the supply chain is the key element, which helps to solve or avoid many problems and to enhance opportunities of the company, especially when the problems and disruptions are arising no matter how well the company has planned its strategy. Nowadays, it needs to be quite flexible, interconnected and smart to face these questions efficiently.

OPPORTUNITIES FROM PUBLIC AUTHORITIES

In the last 10 years, digitalisation of procedures and processes implemented by both public and private transport and logistic operators has become more and more important. This priority is explained by the benefits that it offers, such as the tracking and tracing of freight, the speeding of procedures (for instance customs controls, automated gate in/gate out, yard positioning, and so forth), possibility to cooperate with digital platforms of other competent institutions and data sharing with authorised entities. Digitalised information can minimise the risk of errors,



increase productivity and maximise benefits (both socially and environmentally).

We can observe a gradual transformation of logistical processes, which in the future will foster the evolution of international digital platforms and this will allow small companies to have an international reach and access to extended value added services.

The clearest example in this light could be that of the National Maritime Single Window and the implementation of the new Union Customs Code. In this context, the important step is the sharing of international standards related to cross-border exchanges of data that support the Single Window and creating of favorable conditions for simplifying the transportation of goods and consequently speeding up the international logistical process.

This approach follows the requirements of the recent modernised Union Customs Code, which came into force in May, 2016, and "...strives for further automation of all exchange and storage of information through additional IT systems that integrate the new processes and legal requirements, such as common and shared services to customs and harmonised interfaces and EU portals to trade."

The challenge is to exploit these emerging opportunities coming from Maritime Single Windows and Customs innovative procedures. This will disclose enormous opportunities for both private and public operators in defining new processes and designing an innovative business model with the help of new technologies (Internet of Things) along the international supply chain. The aim is to simplify the import/export loop and to decrease the risk of congestion along the supply chain. In this view, it will be possible to connect the control procedures of various authorities, Customs Agency firstly, and to converge towards a model of a digitalised supply chain, without any gaps in the multimodal transportation of goods.

Such initiatives are promoted by the IMO, EU and the Med countries within EU Funded Projects with the target to implement automatised electronic data exchange between the operators in order to maximise efficiency, safety and security of all logistical processes and communications.

IOT EXPLOITATION WITH AN INTEGRATED SOLUTION

The number one goal is to set up a scenario in which operators could receive all necessary information on goods in order to plan their activities and provide better services. Waiting times and bottlenecks along the supply chain will be decreased with the help of digital platforms installed in order to notify the operators about freight

movements and when and where they will be unloaded.

Increasing the volume of transported goods is organised in a supply chain where, as we said above, visibility is essential, and digitalisation could be implemented with the introduction of new solutions and innovating scenarios. Here the Internet of Things concept becomes relevant. From a technological point of view, the IoT paradigm permits the transported units to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and thereby resulting in improved efficiency, accuracy and economic benefits. Every unit could be identified through its embedded computing system and be able to interoperate within the existing internet infrastructure.

In the context of transportation and logistical processes, the IoT paradigm can be exploited to optimise procedures and increase performance of supply chain actors, shippers, multimodal operators and freight forwarders. This goal can be achieved by implementing new solutions based on a framework of "Hardware-Software-Interoperability Services" capable of integrating the information related to goods over different modes of transport with a special focus on technical harmonisation and interoperability between transport infrastructures and operators.

The primary mission of this paradigm is to make the entire chain of transportation transparent, secure and reliable. In particular, the purpose is to establish a steady flux of information between public and private operators in order to connect them in a holistic and organised system.

In this way, authorised companies and entities could access the data, which previously has been loaded by the various operators, and discover eventual changes in the process or match logistical data with secure information for efficient and timely decision-making.

The Internet of Things is an infrastructure where the devices and platforms are connected to provide the real time services. It manages a great number of different types of data with different levels of importance and sensitivity, so it needs to be transmitted in a reliable and secure way. For this purpose the main focus is on the integration of standardised technologies, such as RFID active and passive technologies.

Circle has developed and tested in several international pilot projects within EU funded programs that allow authorised companies and authorities to access the planning and status information of freight

transportation, matching logistics data with security information, supporting the related changes in business processes and models. The solution has a special focus on the integration of new RFID active and passive technologies (e.g. tags and electronic seals) along the door-to-door logistics chain and it is under implementation in several international pilot projects.

The solution allows for harmonising customs and operative information among the various actors involved in the global supply chains, such as suppliers, shippers, inland and port terminals, inland carriers, shipping companies, and so forth. This information is managed from the moment when the container is sealed, or the freight is shipped, by the shipper at the point of departure, then at the checking point at the port of departure, and finally at the destination point. This permits the various players involved to reduce manual error in data transfer and to reduce dwell time, optimise operational activities at terminals and increase productivity along the entire supply chain.

ABOUT THE AUTHOR

Luca Abatello is the CEO and founder of Circle, Italy. He has a strong expertise in the management of projects in the transport field and European Projects regarding process consulting, R&D, and technological innovation. Mr Abatello has a degree in Economics from the University of Genoa, a Master's Degree from SDA Bocconi and experience (from 2002) as Board of Directors member and Head of Business Solutions at big groups inside the ICT field with a focus in maritime, logistics and ports.

ABOUT THE ORGANISATION

Circle is a consulting and innovation company with a focus on the optimisation of processes with reference to ports, inland ports and the intermodal transport field. Circle's main innovative solution is the MILOS framework. With its modules, MILOS allows you to manage the global door-to-door freight transport and the information exchange between the actors involved in the supply chain.

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