



# DIGITAL CONTAINER SHIPPING

## THE PATH TOWARD INTELLIGENT SUPPLY CHAINS

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The digital transformation of the transportation and logistics industry is progressing consistently, as demonstrated by the masterplans of key players such as Maersk, MSC and CMA-CGM in the container shipping sector. These plans cover the integrated supply chain aspect (an evolution of operational and business processes) through the expansion and acquisition of new digital capabilities.

Ibrahim Gokcen, the Chief Digital Officer at Maersk Transportation and Logistics, recently outlined how the future for his company is dependent upon a seamless synthesis of the organization's expanding digital capabilities with their extensive industry expertise. This is another sign that digitization and automation are the major forces shaping our industry today.

Digital initiatives are becoming stronger and stronger in major companies, however there continues to be a trivialization of solutions as only 'technology-based'. This

results in confusing and 'undercooked' scenarios for companies considering what will be realistically possible and approachable in the coming years when it comes to digital transformation. Our industry cannot simply look at new technologies in isolation. We must be attuned to end users, taking note of their experience and implementing it as a core element in inspiring broader changes to transportation and logistical processes. In essence, the technological evolution of their businesses into the future.

Transport and logistics are no longer merely a service contract in which the customer is a passive actor with no decisions to make; today the customer's end-to-end experience, engagement and satisfaction are the real differentiation between providers. Within logistical models such as the ones executed by Amazon or Alibaba, their differentiation is enabled by supply chains that are on-demand driven. The paradigms with regard to time, cost

and responsiveness are vital in remaining competitive. These strategies are managed through an end-to-end process approach, with a deep understanding of consumer behaviour.

Jeff Bezos, the CEO of Amazon, has highlighted many times at conferences that the real revolution from Amazon is coming from the connection of real consumers to a dynamic network of information, people and ideas. To establish a reliable and scalable structure, Amazon has prioritized its focus on its distribution supply chain as the core of its business model.

### RESPONSIVENESS, FLEXIBILITY AND RESILIENCY

New developments have also been witnessed by key cargo owners such as Inditex and Tesla, both of whom have based their business models on a core logistical performance, which is characterized by high efficiency, responsiveness and

operational sustainability (all critical factors for differentiation). These actors make use of advanced analysis and prediction capabilities to control their product value chain proactively and dynamically, based on an understanding of the real-time transport and market situation, thereby utilizing data from their own supply chains.

Pablo Isla, the CEO of Inditex, has outlined that logistics is not just a question of being fast. It is about defining the 'concept' of demystifying what a customer wants and then constructing a deeply integrated supply chain that flows between design, manufacturing and logistics.

In our industry, value and competitiveness are defined by time and cost requirements. This baseline is not something that is clearly determined in the current technology models and solutions. The only stable truth is articulated through a good understanding and connection of processes, related problems and associated value. There is no common rule to manage goods and deliver satisfaction to customers, especially in terms of time.

Some products require a fast logistic, other products need a just-in-time logistic (these things are not the same) and for others, time is not a factor. There will be no global logistics in our industry as any product, any customer, and any need has to be covered by transportation companies who will always offer the best choice for each unique case. This means that container companies need to modify their vision. They must look from container transportation to cargo transporters, and then focus on what's inside the box.

There is a clear demand to enable more 'Logistics Amazons', firstly to avoid monopolizing the market, and secondly in order to push 'fair globalization' boundaries out. Both the overall supply chain and the individual actors are demanding advanced connectivity and integration. In order to provide this, it is fundamental for collaboration networks and relevant international institutions to frame processes and data standardization in a manner that is open to new and dynamic practices. We must also foster paradigms that will move the industry toward a further decentralization of management specific processes, thereby allowing greater transparency and traceability control throughout the supply chain.

In the present global scenario of investment, innovation and growth, the basics of end-to-end planning processes must be re-evaluated. Today, supply chain planning processes take place in isolation, with claimed victories based on myopic KPIs, while the overall supply chain lacks responsiveness, flexibility and resiliency. Worse still, contingencies are costing



hundreds of millions of dollars to fix and recover. A shift to end-to-end processes, that includes planning but also feedback loops from execution, is necessary to move toward a more intelligent and manageable supply chain.

#### **PROCESSES STANDARDIZATION, DATA STRUCTURE AND SECURITY**

There are fundamental changes needed in planning processes. If our industry is able to standardize processes end-to-end, the digitalization and automation of those processes, given the future evolution of technology, will become the trivial part. The existing and emerging technologies cannot enable change if we don't unlock the potential of connecting processes, leveraging data, and cultivating value-creation mindsets for operational and environmental efficiency and sustainability.

Current processes are focused on performance and cost competitiveness and centre on enhanced asset management covering equipment, storage and personnel. But the related trade-offs driving industry interactions, as with ocean carriers and terminals, are not easy to manage as there is not enough trust or awareness when the related operational decisions are made. There are fundamental changes we need to apply to current processes, and to put new IT on top of non-standard and non-controlled processes before we achieve evolution would be a wasted effort.

With regard to the information infrastructure supporting container flow, all related data components must be embedded within a seamless shipping information pipeline, which would make data accessible and shared between all involved parties. The automatic and secure processing of information will open new levels of transparency and efficiency, as well as enabling proactivity to current critical processes, such as those around customs declaration, thereby impacting container flow only when absolutely needed. Also,

documentation challenges and related financial and legal constraints are moving us toward 'smart contracts' via emerging technologies such as cloud platforms.

However, ocean supply chain actors are not 'open' to sharing any more information beyond that which is specifically required, thereby blocking any potential collaboration and visibility. This openness to share is also impacted by latest cybersecurity incidents, which have resulted from hacking the technology or by exploiting the human element. The introduction of partners and regulatory institutions can solve this and ensure access to the relevant information flows in order to allow us to cover this as yet untapped value. This is where the value of technologies like 'Blockchain' make all difference, as it will enable a secure, traceable and standard digital record across container transactions.

Bodies such as the European Union (EU) are involved in a process of standardization of information, documents and procedures in a bid to allow the use of this data in any part of the logistical chain. Different initiatives such as the EU's Digital Transportation and Logistics Forum (DTLF) are developing consistently and shipping is beginning to be only one part of a complex user-oriented chain. As mentioned above, regulatory institutions will have a key role not only in structuring standards across the current processes and practices, consistently enforcing evolution over obsolete procedures and intermediary parties which are not adding any value.

#### **DIGITAL AND AUTOMATED INTELLIGENCE SOLUTIONS**

The increasing size of mega-vessels will in turn reduce the number of ports, bringing a lot of individual logistical chains together in hub terminals. This reduction of ports in a scenario where the satisfaction of the customer and time optimization is a strategic factor will change the concept of transportation. New inland routes and

terminals are to be expected. We expect new concepts such as inland feeders to appear, reducing the port operation in scale (the value of time is the real enemy of transshipment operations) while increasing inland operations.

This tough deal for mega-vessels demands an integrated and holistic vision (one that is end-to-end), not only for the process associated with vessel calls, but also for the inland routes and terminals, allowing analytics and measurable technical data that will give a real-time optimization of associate processes and a collaborative philosophy with any stakeholders sharing information and operational objectives (KPIs) related to efficiency, security and sustainability.

The optimization of specific logistics for any customer or any transported good needs a next step in the analysis of the data in vessels, routes, ports, terminals, and associated services. The high volume of decisions and the myriad factors that are involved in this optimization require automated, dynamic and interconnected decision making. Only solutions that give visibility through different operational areas, different time horizons and different customer requirements can offer a truly holistic and integrated optimization.

Within this scenario, and with a clear definition of processes and improvement use cases, emerging technologies like artificial intelligence (AI) and blockchain, among others, will offer a huge opportunity to transform paradigms and to introduce evolution in the following ways:

- Artificial Intelligence and Machine Learning: With their pattern-based learning capabilities built to respond to repetitive, yet complicated and dynamic environments, will trigger opportunities by transforming information into meaningful data, connecting planning processes and enabling better visibility into real time flows. Specific uses include:
  - o Improving data generation and reliability from automated equipment moves, resulting in enhanced decision making and accurate analysis of operational performance
  - o Resource allocation and trade-off decision recommendations from correlating stowage, berthing, vessel and yard planning data components
  - o UI analytics and virtual assistants facilitating operator proactivity and consistency of standard operating procedures (SOPs) to deal with exceptions and congestion
- Blockchain: While this technology is still in its infancy, there is huge potential to establish a core foundation to transform the current constraints caused by uncertainty and distrust across the

container flow into opportunities to empower a more secure, safe and better performative global supply chain. Specific uses include:

- o Container release processes (connection with inland networks) and encapsulation of required data components from equipment and processes through cargo flow and related transactions
- o Contracts trusting bonds and securitization through enhanced digital identification of actors and removal of non-value adding intermediary parties
- o Container track and trace across the supply chain, enabling decentralized, digital supply chain management including enhanced transparency across all processes

## CONCLUSION

In conclusion, the success of companies like Amazon and Alibaba is fundamentally based on their customer needs and satisfaction. All this is triggering a strong interest and focus on the transportation and logistics industry and its transformation. Future transformation is concentrated on a more integrated operation across the whole supply chain

and the introduction of new digital concepts and relationships.

All necessary changes require not only the introduction and integration of new technologies, but also the redefinition of operational processes and business models. The future connected supply chain needs to be inherently fragmented with diverse and multiple parameters and requirements across logistical supply chains. Chains that are always changing over time.

As technology is progressing and evolving significantly, our industry needs to be aware of the limitations that are holding back our further evolution. Only the standardization and integration of end-to-end processes and the connection of the customer experience to the operational decision-making process will create the required impact to discover new paradigms on our path toward intelligent supply chains.

Finally a call for innovation. Innovation must be the core foundation to work with a constant sense of urgency, in order to embrace paradigm change and forge the future. Yet we must focus this innovation on the present problems for our industry, which are myriad and demanding. As Albert Einstein once said: "I never think of the future. It comes soon enough."

## ABOUT THE AUTHOR

Manuel Fco. Martínez (Telecommunications Engineer and Port & Logistics Management MsC) has worked on the development of Logistics Platforms during the last 10 years and currently is Managing Director for the Logistic Area at Algeciras Bay, focused on catalyzing the logistic operators' needs in the area and Technology Lead at Andalucía Logistic Network (RLA). He is also General Secretary for Europlatforms, where the implementation of new technologies and logistic concepts are promoted. He is developing his PhD research at University of Cadiz, and focused on cost optimization within supply chains and the influence of time service parameters. He is an active member of different experts groups like with UE DTLF and UNECE.

Dr. Oscar Pernia (Telecommunications Engineer and Industrial Engineering PhD) is responsible for Applied Innovation at Navis, leading ATOM Labs in Rotterdam and focusing on the discovery and experimentation for Navis software solutions while tackling ocean supply chain related problems. The baseline of his work has been centered on the implementation and optimization of processes and solutions for automated terminals, participating in more than 30 terminal projects globally.

## ABOUT THE ORGANIZATION

XVELA provides a transformative, cloud-based collaboration platform and maritime business network that drives transparency, efficiency and profitability to ocean carriers and terminal operators. Through real-time collaboration, shared data and actionable visibility across the vessel rotation, XVELA enables terminals, carriers and their operational partners to work together to simplify, coordinate and synchronize their operations, starting with stowage planning and quickly expanding to berth management and port call optimization. The result is a win-win solution that allows both terminals and carriers to forge new efficiencies, improve customer service and reliability, and capture substantial untapped savings across the ocean supply chain.

Backed by Navis, the leading provider of software and services for terminal operators and ocean carriers, XVELA operates as an independent entity focused on enabling collaboration and operational visibility.

## ENQUIRIES

Web: [www.xvela.com](http://www.xvela.com)