



# Digitized Logistics – Hidden Hero of the Digital Transformation

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It is pointless to mull over whether it is customer demands that are becoming more diverse or whether it is the variety of new technological possibilities that is generating more customer demands. The fact is that today we can do a lot more and we want a lot more. And it is also a fact that everything is becoming much faster as a result of digitalization.



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**T**he path a product takes to its customer has to be as short and as fast as possible. Now more than ever, efficiently designed inter-logistics and intralogistics are advancing to become the crucial success factor for manufacturing and commercial enterprises, and configuring them in line with the market in the context of the Industrial Internet is becoming a key competitive advantage.

Logistics has literally gone through a whirlwind of change. Virtually no other interdisciplinary field has undergone such profound upheavals in recent years, transitioning from an operative corporate function to a strategic core area. The days have long since passed when it was just about enhancing processes and process chains. Now, it is about the big picture. How can today's world of value creation and that of the future be designed to be efficient and intelligent and networked with each other to best satisfy new and continuously evolving customer demands? That is the key question.

## It starts with customer demand

The customer is king. This adage is as old as the hills and couldn't be truer today. With the customers' notions of increasingly more individualized products and services, not only are demands growing, but so is the challenge. At thyssenkrupp Materials Services, the division for distributing materials globally and technical and infrastructure services in the diversified industrial group network at thyssenkrupp, we are working every day on mastering these challenges a little more proactively. Each year around 250,000 customers from a range of industrial sectors including the metalworking industry, the automotive sector, the mechanical engineering business, the aviation industry, and the energy sector place orders for 14 million items, including highly specialized service and pre-processing services for customers, meaning 14 million items which have to be handled in keeping with customer wishes both in terms of quantity and quality. Today, that means being smart, fast, flexible, and yet efficient. Intelligent logistics is becoming a strategic competitive advantage; it is becoming the hidden hero.

## Intelligent flow is essential

The logistics sector is incredibly varied and is no longer clearly defined. As a result of technological innovations like autonomous systems, robotics, additive manufacturing, and new information technology systems and processes, horizontal and vertical value processes are becoming increasingly linked in the wake of the Industrial Internet. More and more, logistics and production capabilities are converging, and everything is connected to everything. Minimal changes in one area can lead to huge changes in the entire system. Physical flows of goods from A to B to C and beyond have to be directed in a way that is as intelligent as possible. The solution for this lies in data streams which are collected, analyzed, networked, and controlled in real time.

## Data: The raw material of the 21st century

The real treasure of digitized logistics lies in obtaining and using data. This is a treasure which holds gigantic potential for the commercial segment of thyssenkrupp, and one which we are leveraging a little more every day.



In the last two years alone, the dynamics in our corporation has gained enormous momentum as a result of the numerous internal digitization initiatives and partnerships. These include new, agile approaches and new forms of exchange and collaboration within the company.

The big challenge now and in the future lies in acquiring a new, data-driven understanding and in creatively designing interlogistic and intralogistic processes. It is about developing and implementing modular, autonomous, and, simultaneously, networked and scalable systems along the entire supply chain. And it is about flexibility because as a result of changing planning logic, fragmentation is on the rise in procurement. The centralized needs assessment was a thing of the past.

## Everything is (not) possible

At thyssenkrupp Materials Services we are addressing this challenge with a two-pronged, targeted strategy which involves pursuing sustainable cost leadership in the distribution business and proven quality leadership in the service business. For both strategies the digital transformation en route to an integrated, global, resilient and, at the same time, flexible supply chain network is running at full speed. And for both strategies we are well equipped thanks to our high product and process capabilities, our distinctive subject-matter expertise, and the skill sets of our employees.

But how exactly can the strategy and goals be turned into reality? How do demands become reality in light of such complex technological revolutions like the ones we are currently experiencing and, ultimately, promoting? We can achieve this by thinking holistically and by starting quite pragmatically on a small scale.



## Think big, start small, scale fast

“Alice & Bob” are our guides. Inspired by a start-up, end-to-end approach from the e-commerce sector, Alice and Bob stand for the front end (sales) and the back end (IT). Both are self-sufficient and can be advanced structurally independent of each other, but, in the process, have to coordinate with each other. The reason for this is that Alice cannot function without Bob just as the operative cannot function without IT support. And so, while each of the large business models at thyssenkrupp Materials Services is already digitized operatively, the global, technological, and scalable bases for the digital transformation are being created simultaneously. Specifically, we are allowing ourselves to be guided by the following question: Where can we enhance our front-end processes with the help of digital technologies and which technological bases do we have to create for this in the back end? In so doing, we have already implemented successful pilot projects for our central business model clusters, which are now gradually going to be rolled out globally and scaled.

In the case of the distribution business model these projects are, for instance, interactive customer apps, software-supported analysis of demand patterns by the selective use of algorithms, or the ongoing expansion of paperless processing along the entire delivery chain. Or let’s look at the other end of the supply chain, namely, procurement. The more

digitally networked and automated purchasers and suppliers are with each other throughout the entire work process, from the initial demand to invoicing, the greater the transparency, the more

flexible the cooperation, and the smoother the logistics. Intelligent cloud structures, which network our distribution and service centers in record time with the right providers for materials that just happen to be in demand on the market, are the answer here. From many networked points the overall picture emerges, from many small breakthroughs a comprehensive one emerges.

## THE NEXT MILESTONE FOR DIGITIZED LOGISTICS IS WAITING IN THE WINGS...

At the same time, Bob is establishing the digital foundation for the entire business activity. And here, too, we have achieved a few important milestones, such as our internally-developed Industrial Internet of Things (IIOT) platform “toii”. With the help of “toii”, machines from a variety of manufacturers and model generations can communicate with each other. And not just among each other, but also with IT systems. Scheduling and intralogistic processes are coordinated with each other in a smart and flexible way across company sites and around the world. In several pilot projects “toii” has already proven itself to be a solid and durable system, it networks band saws and edging machines in keeping with the “Internet of Things”, but also high-bay warehouses or vehicles like forklifts and complex production facilities. The next milestone for digitized logistics is waiting in the wings. In the future, the platform can also predict when maintenance should be performed using Predictive Maintenance. This will bring a significant boost to efficiency in the production processes and, ultimately, also in the delivery chain.

## Quiet heroes with a vision

There is no question that we still have a long way to go. Moreover, we also have demanding goals in digitized logistics because our areas of work in the value chain should ideally grow in keeping with the interest of our customers and their demands. Our customers should be able to focus on their core competencies and enjoy reliable logistics – enhanced and controlled by thyssenkrupp Materials Services – around the world. The operative term here is Extended Supply Chain Management. In the future, we are going to orchestrate not only demands, capacities, logistics, and production costs in the respective value creation stages. We are also going to enhance end-to-end and, depending on priorities, the decision-making with the help of artificial intelligence and smart simulation models.

The Extended Supply Chain Management business model is perfectly complemented by thyssenkrupp’s latest project called the TechCenter Additive Manufacturing. The additive manufacturing – industrial 3D printing – is a process which enables a high-grade digitized process from the order processing to the manufacturing right up to logistics and delivery. This makes additive manufacturing a fine example for the Industrial Internet. It allows for particularly streamlined processes and big advantages with a view to the value and delivery chains. This means that very complex structures which also happen to be extremely light and stable can be manufactured with minimal material costs, the smallest of lot sizes can be achieved with high variability at reasonable unit costs, and storage can be drastically reduced.

The path a product takes to a customer has to be as short and as fast as possible. As part of the Industrial Internet, smart logistics holds untapped potential. It is the “hidden hero” for manufacturing and commercial enterprises. ■