

# DIGITAL TWINS HAVE COME ALIVE IN LOGISTICS

Could you imagine a computer model of an entire supply chain network? What if it could adapt in real-time to meet changes in demand?

The virtual and physical worlds are coming together. Powered by the Internet of Things, cloud computing, advanced analytics, artificial intelligence and advanced visualization technologies, digital twins are virtual representations of physical assets that change, grow and learn alongside their real-life counterparts.



Digital twin technology is transforming the way companies design, visualize, monitor, maintain and manage their physical assets, support their employees and engage with their customers.

Applied to products, machines and even entire business ecosystems, digital twin models and simulations can reveal insights from the past, optimize the present and predict future performance. Digital twins are widely used in manufacturing and the market is expected to grow tenfold by 2027.



## DIGITAL TWIN MARKET<sup>1</sup>

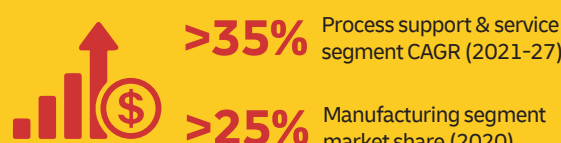
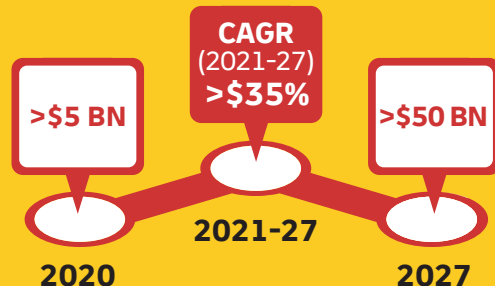
### Regional Analysis

1

NA market value (2027) **>\$15 BN**

2

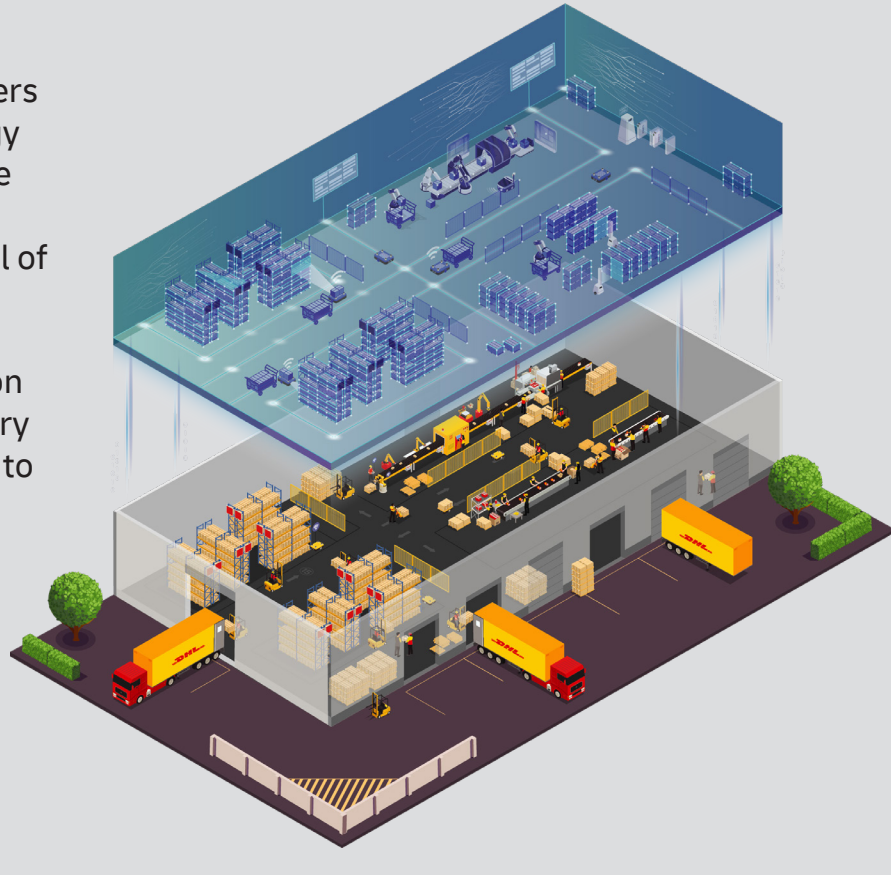
APAC market value (2027) **>\$15 BN**



<sup>1</sup><https://www.gminsights.com/industry-analysis/digital-twin-market>

## IN THE WAREHOUSE

Warehouses and distribution centers are ideal for digital twin technology to be implemented, to simulate the movement of products, personnel and equipment. A virtual 3D model of the facility can be paired with inventory and operational data including the size, quantity, location and demand characteristics of every item. This makes the facility come to life digitally in real-time, bringing many benefits including improved visibility, planning, process optimization, optimized space utilization, lower energy consumption, and reduced wastage in packaging.



## IN TRANSPORT

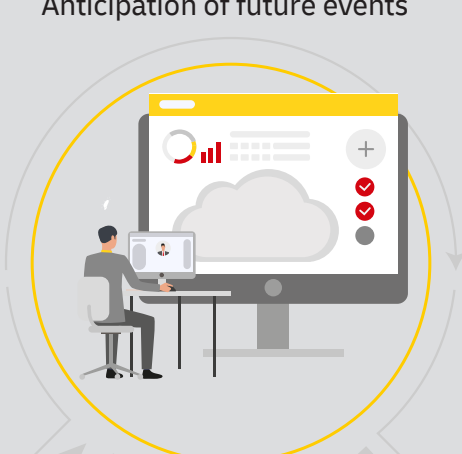
With a digital twin of any physical object, for instance containers and vehicles, insights can be acted upon from the virtual realm. Understanding vehicle performance and predicting requirements for the highly dynamic variables of unscheduled maintenance can be reduced or eliminated, based on notifications from the digital twin. Spare parts can be proactively sourced, so that vehicles stay on the road.



## ACROSS THE SUPPLY CHAIN

Digital twins of supply chains encompass the flow of goods from source to final destination. The end-to-end supply chain is dependent on the orchestration of multiple elements including transportation; order and information systems and, above all, people.

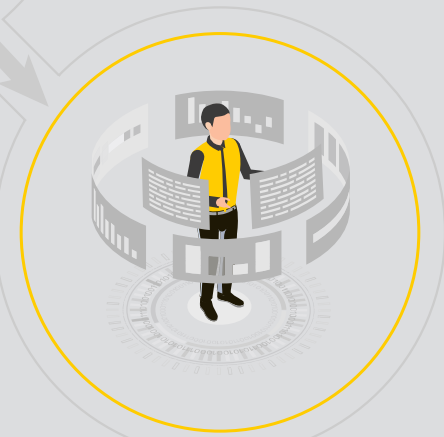
**PREDICTION**  
Anticipation of future events



**Digital Twins give companies full control of the supply chain system<sup>2</sup>**



**TRANSPARENCY**  
Clarity for decision making



**FULL SYSTEM CONTROL**  
Simulation and automation

Source: BCG analysis.

<sup>2</sup><https://www.bcg.com/capabilities/operations/conquering-complexity-supply-chains-digital-twins>

While spatial models and operational data have existed for many decades, digital twins present the opportunity to perform simulation optimization based on machine learning to enable the supply chain to become agile, resilient and predictive. In addition, hypotheses can be tested, for example changing suppliers, adding or removing capacity or incorporating new technology, without disrupting the current physical supply chain.



“In recent months we see increasing interest from customers, partners and academia to discuss digital twins in the DHL Innovation Centers. For sure we will see more digital twin use-cases being implemented in logistics short term, but moving from individual applications to digital twins of entire supply chains will take another five+ years.”

**Klaus Dohrmann**  
VP Head of Innovation Europe & Trend Research,  
DHL Customer Solutions & Innovation

While digital twins may have been around in manufacturing environments for some time, they are starting to breathe new life in supply chains.