

DHL Trend Report: Implementation of digital twins to significantly improve logistics operations

- **Falling costs of key technologies opening the door for widespread adoption**
- **Variety of applications for digital twins in logistics**
- **DHL invites its customers and partners to jointly explore full potential of digital twins**

Bonn, June 27, 2019: DHL has released a new Trend Report on “Digital Twins in Logistics” at the inaugural Internet of Things (IoT) Day, at DHL’s Innovation Center in Germany. The report explains the concept and rise of digital twins as well as how it creates value. The technology, which involves using digital models to better understand and manage physical assets is already well established in some industries and has the potential to significantly change logistics operations.

A digital twin is a unique, virtual representation of a physical thing that monitors and simulates both the physical state and behavior of the thing. The digital copy is continually connected to the physical object(s) and updates itself to reflect real-world changes. Applied to products, machines and even entire business ecosystems, digital twins can reveal insights from the past, optimize the present and even predict future performance.

“The market for digital twins is expected to grow more than 38 percent each year, passing the \$26 billion mark by 2025,” explains Matthias Heutger, Senior Vice President, Global Head of Innovation & Commercial Development at DHL. “Digital twins offer unparalleled capabilities to track, monitor, and diagnose assets. They will change traditional supply chains, with a range of options to facilitate data-driven decision making and collaboration, streamlined business processes, and new business models. We are keen to work with our customers and partners to jointly explore applications in our industry.”

Logistics applications of digital twins

In logistics digital twins could be used in a variety of applications along the entire value chain, including the management of container fleets, monitoring of shipments or the design of logistics systems. IoT sensors on individual containers for example, show their location and monitor for damage or contamination. This data flows into a digital twin of the container network, which uses machine learning to ensure that containers are being deployed as efficiently as possible.

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Digital twins can be applied not only for individual assets but entire networks and ecosystems such as warehouses, combining a 3D model of a facility with inventory and operational data. The system would be able to provide an overview of the state of machines and product availability and could make predictions and autonomous decisions about stock or deliveries. The same principle applies to major logistics hubs or global logistics networks.

Markus Kückelhaus, Vice President, Innovation and Trend Research, DHL Customer Solutions & Innovation, adds: “Powered by IoT, cloud computing, artificial intelligence and advanced visualization tools, digital twins are becoming a more attractive and accessible option for companies. However, bringing these and other relevant technologies together into a full digital twin implementation is a complex and challenging task. Close collaboration between all partners along the value chain is therefore essential to fully capture the potential.”

In the Trend Report, DHL examines the challenges to implementation, such as cyber security concerns, but stresses that business cases for implementing digital things are becoming more compelling. As related technologies get to be more dependable and affordable, businesses in a number of industries will find digital twins invaluable in managing complex systems of assets in real time and increasing efficiency in their processes. The report concludes by considering the investments and changes necessary for the successful implementation of digital twins in logistics.

The Trend Report: “Digital Twins in Logistics - A DHL perspective on the impact of digital twins on logistics” is available for free download at <http://logistics.dhl/digitaltwins>

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50 Years DHL

In 2019 DHL is celebrating 50 years since the company's founding by three entrepreneurs in San Francisco in 1969. DHL began as a disruptor to the traditional delivery industry, circumventing bureaucracy with an innovative new service to deliver documents by air overnight. Since then, DHL has grown into a globe-spanning family of DHL companies with about 380,000 employees in over 220 countries and territories that covers the entire spectrum of logistics and supply chain services. DHL's customer-centricity and can-do culture have fueled five decades of innovation – from the DHL 1000, one of the first word processing computers in the world, to using the purpose built StreetScooter, an environmentally friendly delivery vehicle powered by an electric drive and developed by Deutsche Post DHL Group. With the Mission 2050 commitment to reach zero group-wide emissions by 2050, DHL is continuing to be a trailblazer in the logistics industry.

DHL – The logistics company for the world

DHL is the leading global brand in the logistics industry. Our DHL family of divisions offer an unrivalled portfolio of logistics services ranging from national and international parcel delivery, e-commerce shipping and fulfillment solutions, international express, road, air and ocean transport to industrial supply chain management. With about 380,000 employees in more than 220 countries and territories worldwide, DHL connects people and businesses securely and reliably, enabling global trade flows. With specialized solutions for growth markets and industries including technology, life sciences and healthcare, energy, automotive and retail, a proven commitment to corporate responsibility and an unrivalled presence in developing markets, DHL is decisively positioned as "The logistics company for the world".

DHL is part of Deutsche Post DHL Group. The Group generated revenues of more than 61 billion euros in 2018.