
DB SCHENKER
Innovation Insights
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DB SCHENKER

Content

Innovation Insights

Dear reader,

In a world where the movement of goods and information is the lifeblood of global commerce, innovation is the driving force behind efficiency and progress.

With the DB Schenker Innovation Insights magazine, we want to take you on a journey through some of the latest developments at DB Schenker. In the following pages, you'll delve into the world of innovations that are paving the way for a more connected, sustainable, and efficient future. Learn more about the major logistics trends in the upcoming years, cutting-edge technologies, and forward-thinking initiatives.

We invite you to be inspired by the power of innovation and become a part of this exciting journey.

Enjoy reading and always stay #hungryforinnovation

DB Schenker's Global Innovation Team

Long-haul Autonomous Driving

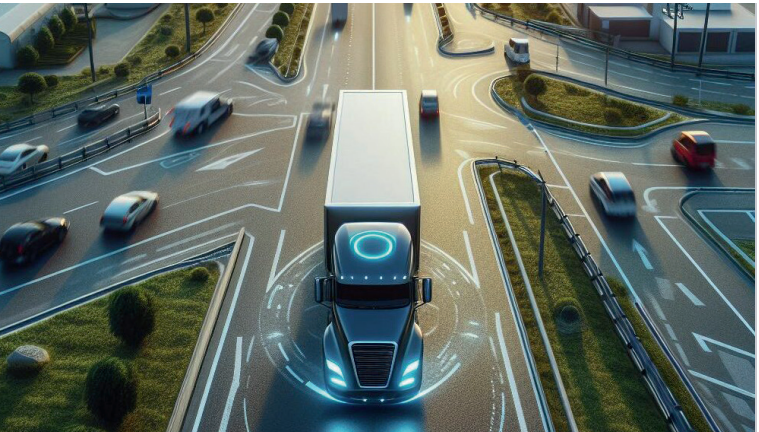
Is this the dawn of the autonomous driving age?

In the world of logistics, efficiency is crucial, and autonomous driving promises just that. This innovative technology, once considered science fiction, is now becoming a reality and is changing the way goods are transported around the globe.

Are we at the dawn of the era of autonomous driving? Autonomous driving has the potential to revolutionize efficiency, safety, and sustainability in the transportation sector. From cutting-edge driver assistance systems to self-driving delivery vehicles, we stand on the brink of a revolution aimed at optimizing supply chains and reshaping transportation routes.

“Given the pace of technological advancements and evolving regulatory landscapes, Long-Haul Autonomous Driving could become reality sooner than we originally thought.”

Cyrille Bonjean, EVP Land Transport Europe at DB Schenker



There are many possible applications in logistics:

- **Long-haul transport:** Autonomous trucks can be deployed to transport goods over long distances, reducing delivery times and increasing efficiency.
- **Warehouse logistics:** Autonomous forklifts and transport robots can operate within warehouses, moving and sorting goods, leading to more efficient inventory management.
- **Last mile delivery:** Autonomous delivery vehicles can be used for the final leg of the supply chain, bringing goods directly to customers, reducing delivery times, and lowering costs.

Our market-neutral Trend Scan sheds light on the current landscape, advancements, and the potential future of autonomous driving. Discover how it may change the way goods are transported - download the Trend Scan and be part of the logistics revolution today!

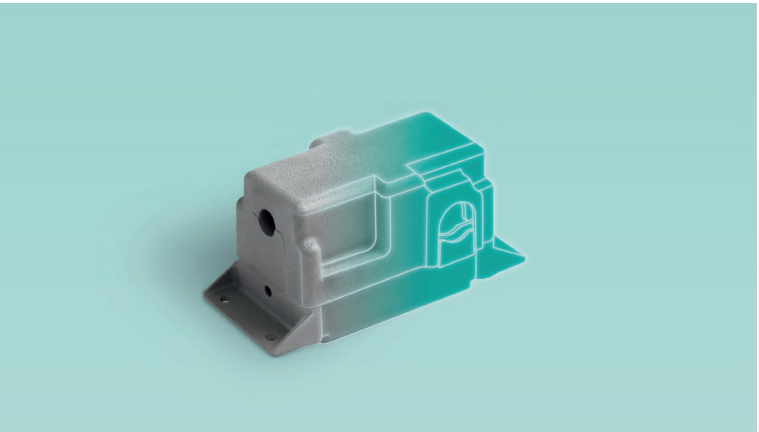
Want to find out more? Want to go deeper? Register to receive the full white paper, packed with further insights about long-haul autonomous driving.

The Impact of On-Demand Production on Spare Parts and Serial Production

Insights into practical implementation

In practice, small order quantities, such as for spare parts, often pose challenges in terms of cost and availability during procurement. Consequently, components to be procured are frequently stocked, inevitably leading to higher inventory costs and increased capital commitment. An alternative approach can be found in on-demand production and 'digital warehousing'.
This is precisely where Schenker's On-Demand Production Service comes into play. Currently, over 17 clients from the industrial, automotive, and rail sectors, are adopting this solution. But how does it work?

Additional manufacturing technologies now in portfolio
A prerequisite for demand-driven manufacturing is the adoption of on-demand technologies such as additive manufacturing (also known as 3D printing). These can produce small quantities of part immediately when needed. DB Schenker has now expanded its portfolio to include conventional production technologies such as CNC machining, sheet metal processing and innovative casting production using 3D-printed tools ('Rapid Casting'). The goal is to be able to produce most of the customers' parts catalogue.



The Digital Warehouse: Current customer successes with Doosan Bobcat
The concept of digital inventory involves storing parts not in physical form but rather all relevant manufacturing information, such as CAD models, in digital format proactively. 'When demand arises, this information can be automatically sent digitally to a supplier who manufactures the parts on-demand,' explains Jochen Loock, an expert in On-Demand Production at DB Schenker. Following a successful pilot, Doosan, with its brands Bobcat and Doosan Material Handling, has decided to digitize its spare parts inventory with DB Schenker to make them immediately available.

"Together we have achieved a 75% reduction in lead time to increase availability with On-Demand Production. Digitizing our spare parts warehousing in Europe will help us react flexibly to bottlenecks in our supply chain." – Sangbeom (SB) SHIM, Aftermarket Operations Director at Doosan Bobcat EMEA

Practical application
With On-Demand-Production, customers can reduce part lead times by up to 80% and costs by up to 40%. Demand-driven manufacturing will also have an impact on sustainability: less scrapping as it is only produced what is needed. The proven business case can be applied to any industry with spare parts or low-volume production: from automotive to rail, industrial and speciality vehicles, from SMEs to large corporations.
If you would like to know more, please contact us at
on-demand-production@dbschenker.com

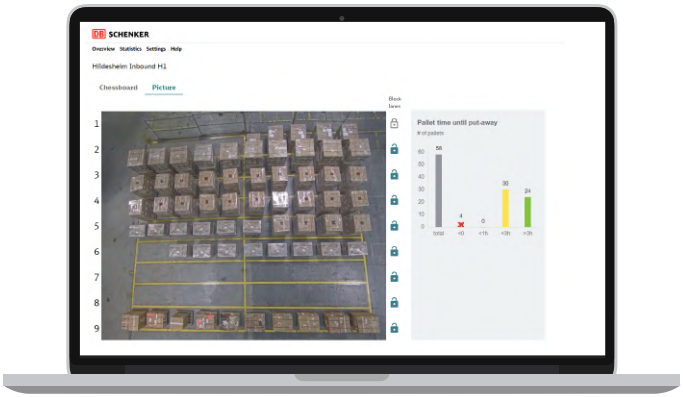
PalletVision - Unlocking new Potentials in Warehouse Management

Enhancing warehouse efficiency through automated object recognition

Warehousing is a complex business of operational efficiency. At DB Schenker, we are constantly innovating to find new ways to optimize operations and provide exceptional service. Enter computer vision – a powerful technology with the potential to change warehouse management.

The power of computer vision
Computer vision goes beyond simply recording footage. Imagine a system that can automatically detect and track pallets, measure times, and provide real-time data on warehouse operations, therefore complementing the data in existing Warehouse Management Systems. This translates to an abundance of valuable data for warehousing. This technology allows DB Schenker to address specific operational challenges and gain valuable insights, ultimately enhancing productivity.

Through our collaboration with the renowned Fraunhofer Institute, DB Schenker is introducing a **no-touch solution that tracks dock-to-stock cycle times of pallets: PalletVision**. To gather some information to further improve warehousing processes, DB Schenker is piloting this technology on their site in Hildesheim!



Increased efficiency: The PalletVision advantage
PalletVision significantly enhances warehouse efficiency through automated detection and tracking of incoming pallets. Translating video streams into data, the user-friendly frontends provide critical inbound KPIs for warehouse management and put-away priorities for forklift drivers, thus ensuring process transparency and streamlined operations. Customers ultimately benefit from improved bottleneck management and Service Level Agreement compliance. DB Schenker leverages this solution with a robust architecture featuring bird-eye cameras and hardware installations designed for near-time results.

Supporting every level - empowering teams
PalletVision empowers not just the management level but also the individuals on the ground floor.

- **Shift leaders & management**: Access live overview of inbound areas, prioritize pallets for faster processing, and generate comprehensive reports on actual dock-to-stock cycle times through the Power BI interface.
- **Forklift drivers:** Gain instant transparency on priority put-away lanes, reducing the need for constant communication with shift leaders, and ultimately streamlining the workflow.

PalletVision unlocks new potentials in Warehouse Management - DB Schenker continues to explore the endless possibilities of computer vision across all business units to innovate operational excellence. Curious? **Watch the video** to learn more.

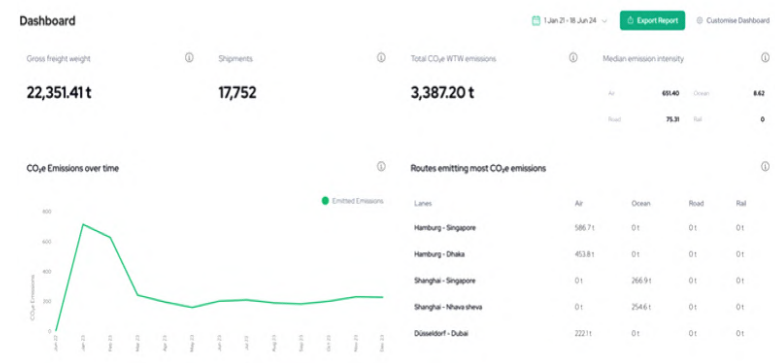
DB Schenker & NxtLog
A Visionary Collaboration

The importance of emissions in the supply chain

In an era where climate change is increasingly impacting our world, the logistics industry faces significant challenges. Transport emissions are a major contributor to global warming, making sustainable solutions essential to reduce the environ-mental footprint.

The supply chain plays a crucial role in this effort, affecting everything from production to delivery, and significantly influencing the environment. By adopting sustainable practices throughout the supply chain, companies can greatly contribute to environmental protection.

The importance of emissions in the Supply Chain
The supply chain includes all steps from raw materials to end consumers, generating greenhouse gases that contribute to climate change. The World Economic Forum states that supply chains account for about 90% of global greenhouse gas emissions.



In 2021, the European Commission adopted a package to promote sustainable activities in the EU, including the Corporate Sustainability Reporting Directive (CSRD), effective from 2023. This directive requires companies to disclose credible and comparable sustainability information, with severe penalties for non-compliance.

From theory to practice: DB Schenker & NxtLog
How can logistics companies like DB Schenker reduce emissions while maintaining efficient supply chains? DB Schenker has partnered with **NxtLog**, a spin-off of Schenker Ventures, to address this challenge. NxtLog, 100% DB Schenker company, is designed for companies with supply chains managed by various logistics service providers (LSPs). It measures, reports, and reduces logistical emissions regardless of transport mode or country of operation. The tool cleans logistical data, such as origin and destination locations, and conducts plausibility checks for shared routes, providing visibility and mitigation strategies for emissions.

Using powerful algorithms, NxtLog calculates emissions across the supply chain. Its modern web application allows easy access to key metrics. Reports can be customized, exported, and filtered for various stakeholders, enabling customers to track their CO2 emissions throughout the transport process.

DB Schenker's collaboration with NxtLog exemplifies how innovative solutions can help logistics companies meet sustainability requirements while maintaining efficient supply chains, contributing to the fight against climate change.
For further infromation contact the NxtLog team
tobias.heyer-extern@dbschenker.com

NXTLOG
NET-ZERO LOGISTIC NETWORKS

Successful Partnership with the Startup Dexory

First deployment in the DB Schenker warehouse in Utah, US

In the dynamic world of logistics, innovation and collaboration are crucial success factors. This is proven in the remarkable partnership between DB Schenker and **Dexory**.

Schenker Ventures and DB Schenker STARTup terminal discovered Dexory — an emerging startup with a vision to streamline inventory management through cutting-edge digital solutions. Recognizing the potential synergy, **Schenker Ventures** swiftly invested in Dexory, fostering a partnership built on shared goals.

The pilot project
In a swift and efficient implementation in the DB Schenker site in Utah, Dexory unveiled its cutting-edge DexoryView solution, featuring state-of-the-art autonomous mobile robotics (AMRs) and a seamlessly integrated digital twin. DB Schenker is to leverage Dexory's technology to enhance its real-time visibility of stock and occupancy tracking capabilities.

With a focus on promoting efficiency and optimizing resource utilisation, the DexoryView solution scans the Very Narrow Aisle (VNA) area of the site, covering a staggering 40,000 pallet locations daily. Leveraging advanced computer vision and AI, DexoryView provides clear, visual insights for every shelf and height level. This eliminates the need for manually checking discrepancies and ensures important operational information is easily accessible. It emphasizes priority actions, helping to make operations more efficient.

Daniel Spencer, Director - Solutions & Engineering at DB Schenker Americas comments **"We are excited to introduce Dexory's promising technology in our warehouses. The deployment of Dexory's robotics and AI solution under-scores our dedication to staying at the forefront of tech-nological advancements and highlights our pursuit of operational excellence."**

DB Schenker's willingness to innovate does not end with the pilot program. After the kick-off of the first deployment in our warehouse in Utah, US, the STARTup terminal team, together with the core organization, is expanding the potential applications and deployments in order to further scale the solution across more locations.

We look forward to sharing further progress and success stories with you.

Stay tuned for more success stories from **STARTup terminal**.

The Future of Transport: The Scania R 450e e-Truck in Sweden

A 64-ton truck with a range of up to 300 kilometers powered by 7 batteries

In a world where environmental protection and sustainability are increasingly important, electric vehicles are no longer a trend but a necessity. Especially in the transport sector, they play a crucial role in reducing emissions and transitioning to a greener future. DB Schenker is therefore continuing to drive forward the use of fully electric trucks and is the first company in Sweden to start testing the R 450e electric truck from Scania in regular long-distance transport.

“For DB Schenker, the purpose is to test and gain experience of fully electric heavy vehicles in long-distance regular traffic. The electrification of heavy vehicles plays a crucial role in our transition to carbon-neutral transport and, since heavy traffic accounts for the largest emissions for us, it is incredibly important.”

Anna Hagberg,
Head of Network & Scheduled Services at DB Schenker

Scania R 450e e-truck: A revolution on wheels

The seven batteries in Scania’s R 450e have a capacity of 728 kilowatt hours. The number of batteries has been increased so that this vehicle, with a gross vehicle weight of 64 metric tons and a length of 24 meters, would be able to cover approximately 300 kilometers without intermediate charging in sometimes unpredictable Nordic weather conditions. The R 450e e-Truck is the first battery-electric long-haul truck from Scania with this driving range. The truck is charged with ABB E-mobile’s high-power chargers at DB Schenker terminals.

As part of the E-Charge project, the fully electric truck will replace a diesel-powered truck. The truck will transport goods between the terminals in Jönköping and Södertälje in the evening and at night and distribute them to customers during the day.

The e-charge project

The E-Charge project brings together fourteen partners from the fields of vehicle construction, science, logistics, electricity, and fuel to jointly develop and test battery-electric long-distance transportation. Cross-sector cooperation and development is of particular importance to this project. The aim is to conduct research in virtually all areas related to the challenges this initiative would present – from the energy consumption of the vehicles to the dimensioning of the chargers and charging stations and the impact on the power grid to the effects on transportation and logistics.

Northbound: Reducing Demurrage and Detention Fees in Real-Time

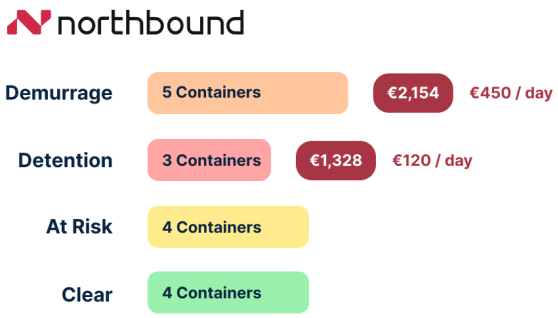
Northbound raises 1.3 million euros in pre-seed to optimize container flows

The Berlin-based startup **Northbound**, initially backed and accelerated by DB Schenker and MVP Factory, offers a groundbreaking solution to reduce demurrage and detention (D&D) fees and optimize container flows, saving millions for importers. The company has successfully completed a pre-seed financing round, raising 1.3 million euros.

Northbound is developing a SaaS platform that protects companies from million-dollar container penalty fees (D&D fees). The platform optimizes the flow of goods from the port to the warehouse, considering capacities and delivery commitments. The funding will be used to expand the platform's AI capabilities, grow the team, and acquire more customers. The financing round was led by Apex Black and included participation from IBB Ventures, id4 ventures, Schenker Ventures, MVP Factory, and several business angels.

What Northbound does

Northbound provides an intuitive dashboard that offers real-time data on container location, status, and impending D&D fees. This allows prioritized management of shipments, optimizing the flow of goods, and ensuring timely deliveries. Find out more on **getnorthbound.ai**.



figurative illustration of the demurrage & detention dashboard

"Northbound offers importers completely new capabilities. Instead of manually tracking containers, the real-time transparency and automated invoice verification enable a drastic and cost-effective reduction of demurrage & detention costs," says Erik Wirsing, VP Global Innovation at DB Schenker.

Successful software validation with a major German sportswear manufacturer: It was proven that over 90 percent of D&D costs within a two-month period could have been avoided through the increased cost transparency and optimized control that Northbound's AI solution offers. Northbound's algorithm automatically flags incorrect invoices, enabling disputes on up to 20 percent of all invoices and preventing unjustified payments. According to DB Schenker and numerous customer interviews, oftentimes the majority of D&D fees can be avoided. Most of these costs are not caused by actual obstacles such as lack of capacity or delays in customs clearance, but by a lack of awareness and suboptimal planning.

What the DB Schenker Venture Studio does

Together with our partner MVP Factory, we bundle ideas, talents, capital, and resources to create an environment where exceptional companies can emerge in rapid development cycles. Founders benefit not only from competitive upfront financing, but also from professional support in development, market launch, and scaling of their minimal viable product. Additionally, they gain valuable access to DB Schenker's global resources, such as infrastructure, expertise and customers.

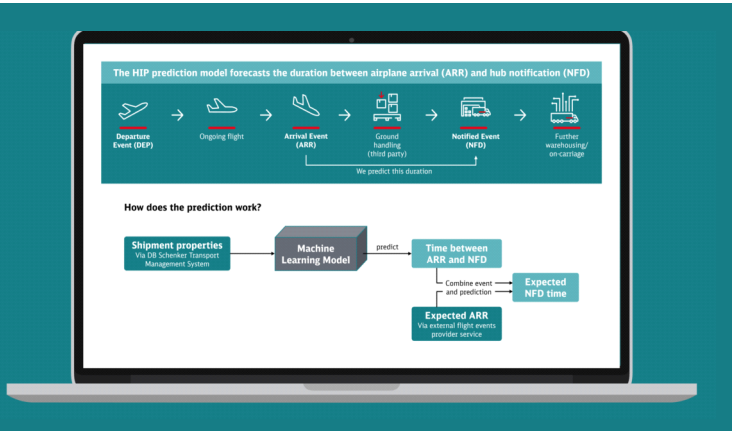
DB Schenker Hub Inbound Prediction (HIP)

Are you ready to become “hipper” with AI in Air Freight?

In logistics, precision, transparency, and foresight are crucial. A good overview of expected arrivals of shipments is essential for inbound operations, especially in the fast-paced Air Freight business. But there is more to the arrival of a shipment than the touchdown of its flight.

Imagine you’re on a flight, and upon landing, it takes 30-60 minutes to retrieve your luggage. You call a friend as soon as you are ready for pickup. Similarly, for shipments, the Notified (NFD) event suggests when the shipment is ready for pickup after being handled by the ground handling agents, provided by third-party companies. Unlike the common Arrival (ARR) event, NFD predictions are not readily available from third-party providers, creating a gap in transparency.

“HIP project” comes into play - an AI solution called Hub Inbound Prediction (HIP). HIP integrates shipment information from various platforms and uses predictive analytics to enhance process stability and transparency, especially during peak periods.



For example, if a flight is scheduled to arrive at 8:10 a.m., HIP’s calculations predict a ground handling duration of 3 hours and 20 minutes, forecasting the shipment ready for hub processing by 11:30 a.m. This enables streamlined operations and improved workflow efficiency.

HIP’s AI-based machine learning model predicts the ground handling time, defined as the time between ARR and NFD. By combining the expected or actual arrival time with the forecasted ground handling duration, DB Schenker can predict the NFD event. This aggregation of the NFD predictions provides an overview of the expected, before-predicted, short-term workload, tailored to specific hubs/gateways, acting as a one-stop shop for information on incoming shipments.

“Hub Inbound Prediction (HIP) is a great enhancement for our Air Freight import operations,” says Björn Eckbauer, SVP Global Operations & Procurement Air Freight. “With HIP, we now have full visibility of incoming shipments, helping us plan processes and capacities better and provide our customers with accurate predictions on when to expect their goods.”

While there is room for refining NFD predictions, HIP represents a major advancement in AI solutions, shifting away from reliance on “gut feelings,” bolstering operational efficiency.

DB Schenker makes the future of Air Freight more “HIP,” one prediction at a time.

Reinventing the Wheel with the World's first autonomous Wheel

wheel.me implementation in the DB Schenker warehouse in Dublin

As a pioneer in robot technology, the Norwegian company Wheel.me is focusing on developing an efficient, cost effective and flexible automation with its innovative solution **wheel.me Genius - the world's first autonomous wheel** which transforms conventional containers or trolleys into an autonomous mobile robot with minimal effort, revolutionizing intralogistics.

The wheel.me Genius technology is a set of smart wheels, that are controlled by an advanced indoor navigation system having precise positioning and localization using inputs from various sensors and camera integrated in its hardware. By simply attaching the wheels to any load carrier, they get transformed into an autonomous unit that can be controlled by an intuitive mobile app. This allows flexible adaptation of this solution into our processes without the need for complex conversions or IT integrations. The latest product, the fully autonomous **Genius 2**, boasts low investment and operating costs, high flexibility and state-of-the-art sensor technology for safe and dynamic obstacle detection.

The autonomous wheel makes it possible to transport goods from one place to another reliably and with increased safety, without human intervention. The advantages are obvious:

- Accelerated & autonomous material transportation
- Easy customization (based on requirement)
- Significant cost savings
- No dependency on IT / WMS integration

The system supports a maximum load capacity of up to 800 kg and is designed for 24/7 warehouse operation, making it suitable for various industries like manufacturing, logistics, and healthcare. In logistics, it can handle transport tasks such as put away, replenishments, supplying picking stations, waste disposal, and quick transfers for cross-docking.

In Dublin, Ireland, DB Schenker has developed an innovative waste disposal solution in collaboration with LSM Limited and wheel.me. For this purpose, platforms or frames were constructed with the autonomous wheel.me "Genius" wheels, which are specially designed to hold waste containers. These containers can be triggered via the wheel.me app as soon as they are empty and automatically drive to the waste disposal stations. On arrival at the disposal station, the system recognizes the presence of the container. The container is positioned, lifted, and turned over to empty the contents safely. After emptying, the container platform automatically returns to its starting station, where it is again made available for waste collection.The solution has been deployed recently and is under final testing phase. The successful implementation and integration of this startup's solution will be a promising development.

Business meets Science: DB Schenker partners with Mobility2Grid Research Campus

A booth made from euro pallets, transported by a hydrogen-powered truck?

The emerging boundaries when integrating sustainability into logistics can only be overcome by businesses and science working together. To further pursue this approach of innovative cooperation, DB Schenker has been collaborating with the research campus Mobility2Grid, together with its partner TU Berlin, since spring 2022. The core idea of the research campus is the integration of commercial and private electric road vehicles into intelligent, decentralized energy networks. To this end, safe and affordable electrification technologies are being developed.

At this year's LogiMAT in Stuttgart, a delegation from Mobility2Grid visited the DB Schenker booth, which was mainly build from regionally manufactured euro pallets, transported by the DB Schenker hydrogen truck. Armin Humer, DB Schenker Sustainability Manager and Nina Weber, Managing Director of Mobility2Grid, met on-site to exchange about current research projects.

About the cooperation
DB Schenker is a partner in the Mobility2Grid work package "Electrification of Fleets and Depots," which examines the infrastructural connection of car, public transport, commercial vehicle, and logistics fleets. The focus is on energy provision through diverse infrastructures at so-called multifunctional mobility hubs. This includes analyzing usage profiles of different fleet types and evaluating infrastructures for energy provision. A key goal is to develop recommendations on how to combine and operate fleets and infrastructures sustainably in terms of energy requirements. The impact of alternative drive technologies such as e-mobility and fuel cells on logistical processes is also being examined, along with the integration of new processes and timings into logistical management systems.

H2 truck premiere for DB Schenker's trade fair logistics
The first operation of the new H2 truck in DB Schenker's trade fair logistics portfolio was executed in Stuttgart for mac. brand spaces, a renowned player in the trade fair business. The successful premiere of the Hyundai FC Xcient Fuel Cell truck confirms that H2 technology represents an attractive product, ensuring efficient and resource-conserving transport for logistics processes.

For the future, the exchange and knowledge transfer remain an opportunity for Mobility2Grid and DB Schenker to develop innovative solutions. By joining these forces, our environment and society will benefit in the long term and the goal of an environmentally friendly city is within reach.

Find out more about DB Schenker's sustainable projects and initiatives on Pulse/de.

ITONICS - The Innovation Operating System

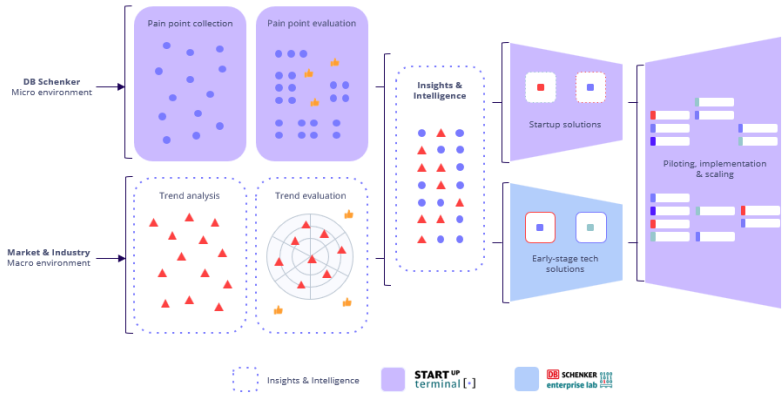
The DB Schenker Innovation Platform

The last decades have been characterized by transformative changes within the logistics industry. It has embraced sustainability and digitalization, adopted artificial intelligence and automation, and adapted quickly in response to increasing globalization and disruption.

A challenge at DB Schenker, arising during the expansion of innovation activities, was the lack of global connectivity in innovation processes, intelligence, and expertise. Disparate tools and various project management applications led to little or no transparency and knowledge transfer.

This is where the collaboration with ITONICS Innovation OS comes into play. With ITONICS, the DB Schenker Global Innovation team built a platform that fully serves the needs as the single operating system for all innovation-related initiatives.

Sebastian Schuhmann, Head of Global Innovation Portfolio, DB Schenker, adds, **"At DB Schenker, we are constantly looking for ways to stay one step ahead in a rapidly changing logistics landscape. ITONICS is our operating system for all innovation initiatives. It supports us in bundling our innovation activities in an streamlined, collaborative and data-driven process**."



The ITONICS innovation platform allows for:

- **Faster time-to-insights - from 15 minutes to 1 minute to create a startup profile:** We speed up the journey by reducing the manual effort and time needed to aggregate, analyze, and report on innovation intelligence.
- **Trend Insights:** Using the ITONICS Radar to centralize trend analysis, evaluation, and reporting for a comprehensive and collaborative view of industry trends.
- **Opportunity identification:** We streamline the discovery, evaluation, and monitoring of emerging opportunities for early-stage technologies.
- **External - internal exchange, 25% faster in managing startups:** We established a collaborative space where both external startups and internal stakeholders can share ideas, insights, initiatives, and pain points.

"The platform has not only enabled us to bundle our innovation activities, but has also opened the door to exciting new part-nerships with start-ups that enrich our business model with new perspectives. We can work together transparently at every stage of the innovation process." Niklas Weishaupt, Senior Global Innovation Manager, DB Schenker.

ITONICS' Innovation OS empowers DB Schenker to increase efficiency, transparency, and accountability in daily operations, making it possible to create long lasting impact.

DB Schenker tests electric Trucks for Line-haul Transport

Advancing alternative drive technologies in Logistics

MAN eTruck
On February 19th, 2024, DB Schenker started testing the new electric MAN eTruck. The latest heavy-duty truck set off in regular service from the Gersthofen terminal to Neufahrn. The 80-kilometer route took just under one hour.

The cooperation between DB Schenker and MAN Truck & Bus has generated enthusiasm on both sides. **"It is another milestone in making heavy-duty transport emission-free,"** reports Ralf Toebbe, Head of Land Transport at DB Schenker, cluster Germany/Switzerland. Friedrich-W. Baumann, Executive Board Member for Sales & Customer Solutions at MAN Truck & Bus, comments: "Our new MAN eTGX has successfully proven in its first test deployment with real cargo at DB Schenker that electromobility also works in heavy goods transport!"

By 2026, DB Schenker plans to integrate 100 MAN eTrucks into its fleet. For climate-friendly road transport, DB Schenker already relies on various other alternative drive systems in addition to e-vehicles, such as hydrogen and biofuels.

Mercedes-Benz eActros 600
Another linehaul test run took place on May 16th, 2024, from Crailsheim to Ilsfeld. For the first time, DB Schenker tested a near-production prototype of the battery-electric Mercedes-Benz eActros 600 in regular operation. The eActros covered a route of around 360 kilometers with two swap bodies - low-emission, reliable, and future-proof. With its three powerful batteries, it can achieve a range of up to 500 kilometers.
"We are proud that the first regular service deployment of a Mercedes-Benz eActros 600 is taking place at DB Schenker. For us, this is another milestone in expanding our e-fleet and an important step towards sustainability in road transport," says Ralf Többe, Head of Land Transport DB Schenker, cluster Germany/Switzerland.

DB Schenker has agreed with Mercedes-Benz Trucks to successively integrate 100 eActros 600s into the fleet starting with the series launch at the end of 2024. This indicates the clear trend at DB Schenker to further accelerate alternative drive technologies in the future.

Innovative Partnership with Ottobock

Successful implementation of SUITX exoskeletons at DB Schenker

We are delighted to share a success story exemplifying DB Schenker's collaboration with an innovative startup. In partnership with Ottobock, we are exploring and testing SUITX, a state-of-the-art exoskeleton technology. For over a decade, SUITX has been revolutionizing physically demanding workplaces with innovative wearables. Originating from the University of California Berkeley's Human Engineering and Robotics Laboratory, SUITX has teamed up with Ottobock, the global leader in orthopedic and biomechanical products, in 2021.

Since then, SUITX's cutting-edge research has been melded with Ottobock's extensive market reach across 35 countries. With the aim to alleviate work-related strains and improve ergonomic practices for a healthier, more productive future in labor-intensive sectors they are crafting highly innovative, lightweight, efficient exoskeletons for various industries. Since 2019, DB Schenker has been conducting systematic pilots for the implementation of exoskeletons in its logistics operations.

Subsequently, practical test series were carried out over a four-week period in several Business Units. These successful pilots spanned across different divisions, with a focus on packaging and picking and led to an implementation at various locations. Today we count more than 35 sites in Europe with SUITX products in operation.

Exoskeletons are revolutionizing safety and efficiency in logistics operations by providing critical support to workers and increasing overall performance. They create a safer work environment, prevent injuries and fatigue, and optimize flexibility in tasks, ultimately improving quality and efficiency.

Our effort to pilot and integrate SUITX products into our workplaces resonates with our value proposition to be the partner of choice for startups and scaleups.

Stay tuned for more success stories from **STARTup terminal**.

DB Schenker Sweden teams up with Viscando for increased Terminal Efficiency

3D sensing, visualization, and AI to reduce processing time and congestion

Efficient and timely handling of goods at DB Schenker terminals is critical for fast and high-quality deliveries. At the same time, large and uneven inflow of goods can lead to longer processing times, violated time schedules, uneven workload, as well as congestion and stress that can lead to accidents, damaged and lost goods. To address this challenge, DB Schenker Sweden has teamed up with **Viscando**, a start-up company working specializing in sensor technology, data and AI for traffic and mobility.

In a proof-of-concept project, called TRASSEL, the companies have investigated how 3D sensing, data visualization and AI can increase efficiency of terminal management reducing processing time and congestion, through insights, visualization and forecasting of presence, placement, and dynamics of goods.

The project

The pre-study started with meetings and site visits, to identify areas where terminal operations can benefit from data and insights on space use and goods dynamics. In the next step, data was collected using Viscando 3D&AI sensors at the terminal in Gothenburg. Finally, a workshop was conducted with terminal staff where visualizations of goods dynamics, as well as indicators and statistics were presented and discussed. Some of the visualizations are shown in below figures.

Conclusions and next steps

It was concluded that the visualizations and indicators provided objective and useful insights into terminal operations. Moreover, it showed that modern AI could be used to forecast goods dynamics and space utilization, allowing for proactive decisions and changes. **"The possibility to visualize the space usage in real time give us large possibilities to take better decisions and manage the terminal work. We see big potential to combine the real time data with advanced AI to enable smarter and optimized terminal usage"** - Gustav von Sydow, Head of process digitalization and innovation at DB Schenker.

Overall, the pre-study has demonstrated a strong potential for 3D sensor technology, visualization, and AI to contribute to more productive terminal operations. There is a mutual interest to continue the collaboration, developing practical applications that would give tangible quality improvements and increase efficiency such as:

- Optimization of the terminal layout for reduced better space use and workload.
- Dynamic routing of trucks to gates based on intake area availability.
- Dynamic resource allocation based on historical data and forecasts.
- More efficient task allocation, higher quality and steering of AGVs.

Schenker Ventures Investment Portfolio

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Corporate Venture Capital

SCHENKER ventures

Our portfolio companies benefit from the access to the global DB Schenker network of suppliers, partners, and customers, as well as active connections to top-tier investors. Additionally, we provide deep industry knowledge in land transport, air and ocean freight, contract logistics and supply chain management.

DEXORY

Dexory has created a robot for inventory data collection, enabling real-time warehouse analytics for complete transparency in warehouse operations. The data is maintained and managed on the DexoryView software.

FERNRIDE

Fernride offers a Teleoperation-as-a-Service (TaaS) solution to remotely control any drive-by-wire vehicle, initially for container handling in ports. Long-term use cases include yard shunting in production and distribution centers.

SQUAKE

SQUAKE provides accurate carbon calculations to national and international standards and automated carbon removal and reduction along the supply chain. They connect customers and global partners for information-based and sustainable decision making for any business.

WAREHOUSING 1

Warehosuing1 is a logistics-tech startup in the e-commerce fulfillment space with one of the largest networks in Europe. They provide e-commerce and retail brands with suitable warehouse logistics solutions at any location, enabling them to manage their fulfillment digitally.

GIDEON

Gideon Brothers is a robotics engineering company based in Europe, providing intelligent material handling solutions powered by AI and 3D. Their vision-driven autonomous mobile robots make indoor and outdoor operations more efficient by automating and orchestrating complex industrial workflows.

LASERHUB

Laserhub offers an automated and intelligent marketplace platform for procurement and supplying of custom manufacturing, to speed up the procurement process and leverage the resources in the production process.

VOLOCOPTER

Volocopter is building the world's first sustainable and scalable urban air mobility business to bring affordable air taxi services to megacities worldwide. They are also developing products for the logistics sector with their heavy-lift cargo drone, the VoloDrone.

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