Leading the digital transformation in Logistics

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JUNGHEINRICH

MORE DIGITALISATION AND CONNECTIVITY

We're the intralogistics pioneers –
presented by Nico Rosberg

Make the most of your warehouse.

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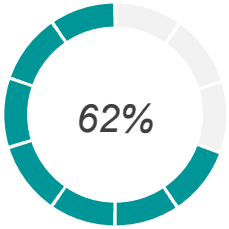
A Breakdown of Logistics Challenges in 2022

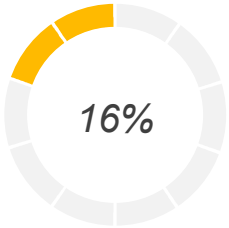
- Labor and Shipping Shortages. ...
- Rising Freight Costs. ...
- Managing Complex Systems. ...
- Handling Customer Expectations. ...

US
$ 45.6
Billion

The estimated 2020 global market or **digital transformation spending in logistics**. More businesses are investing in modernizing and updating their supply chains.



The **loss in finances** a supply chain disruption can cause. There's a lot that can go wrong with your logistics, so it's best to diversify your fulfillment.



Of businesses **outsource their supply chain tasks to a third party**. Even the biggest enterprises do it. With so much to offer in simplifying your logistics, the potential in 3PLs is there.

Customer requirements

Factors that determine customer requirements

Established factors

Low total cost of ownership

Flexibility and scalability

Long operating time and durability

New factors: E-Commerce / Omni-Channeling

Higher expectations (same day/free delivery)

Improved compliance (full traceability)

Higher number of orders, fewer items

Market factors: job market

Increased shortage of manpower

Stricter health and safety regulations

Goods:

Increased adaptability, shorter life cycles

Portfolio Overview Mobile Robots (AGV/AMR)
Vehicle types

AMR - Autonomous Mobile Robot (SOTO)

AMR - Autonomous Mobile Robot (arculee)

AGVs based on automated VNA trucks (EKXa/ETXa)

Typ II

AGVs based on automated serial trucks (EREa/ERCa/EZSa) / on serial components (EKSa)

Typ I

Portfolio Overview Mobile Robots (AGV/AMR)
Use cases

Arculee S – versatile applications

Table transport

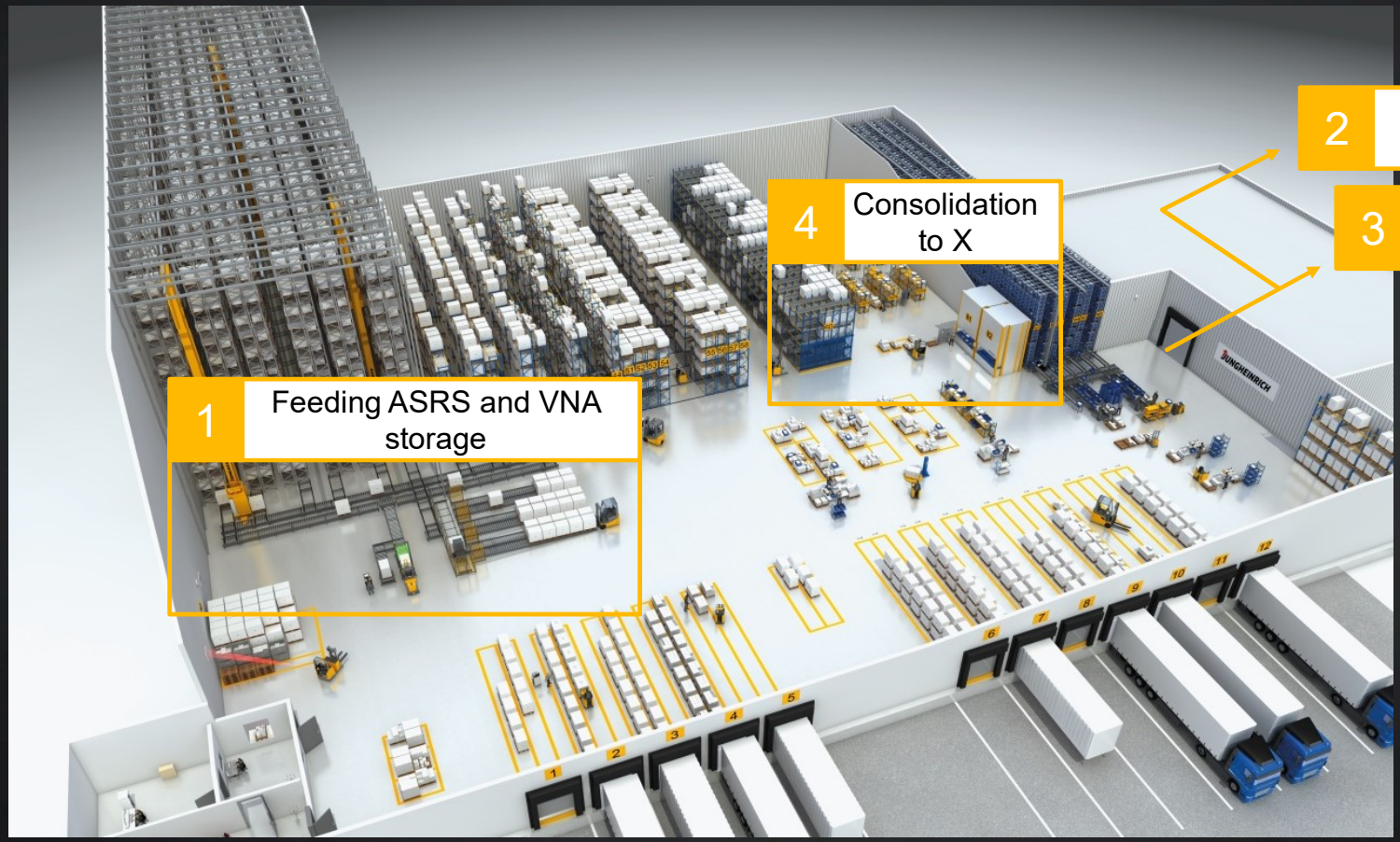
- Transport of different transport tables or customer specific racks
- Autonomous detection of table position and adaption of entry route

Pallet transport

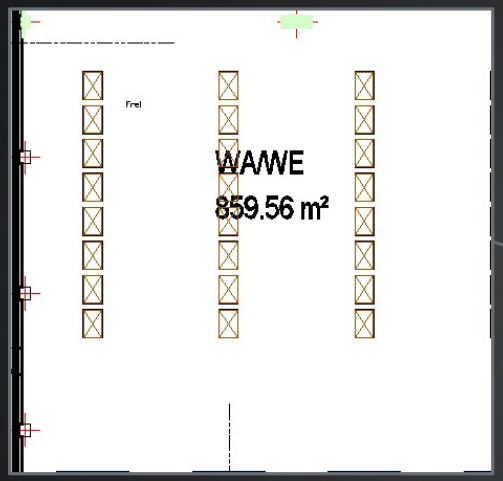
- Transport of different pallets by using backpacks
- Individual back-pack design for project specific applications

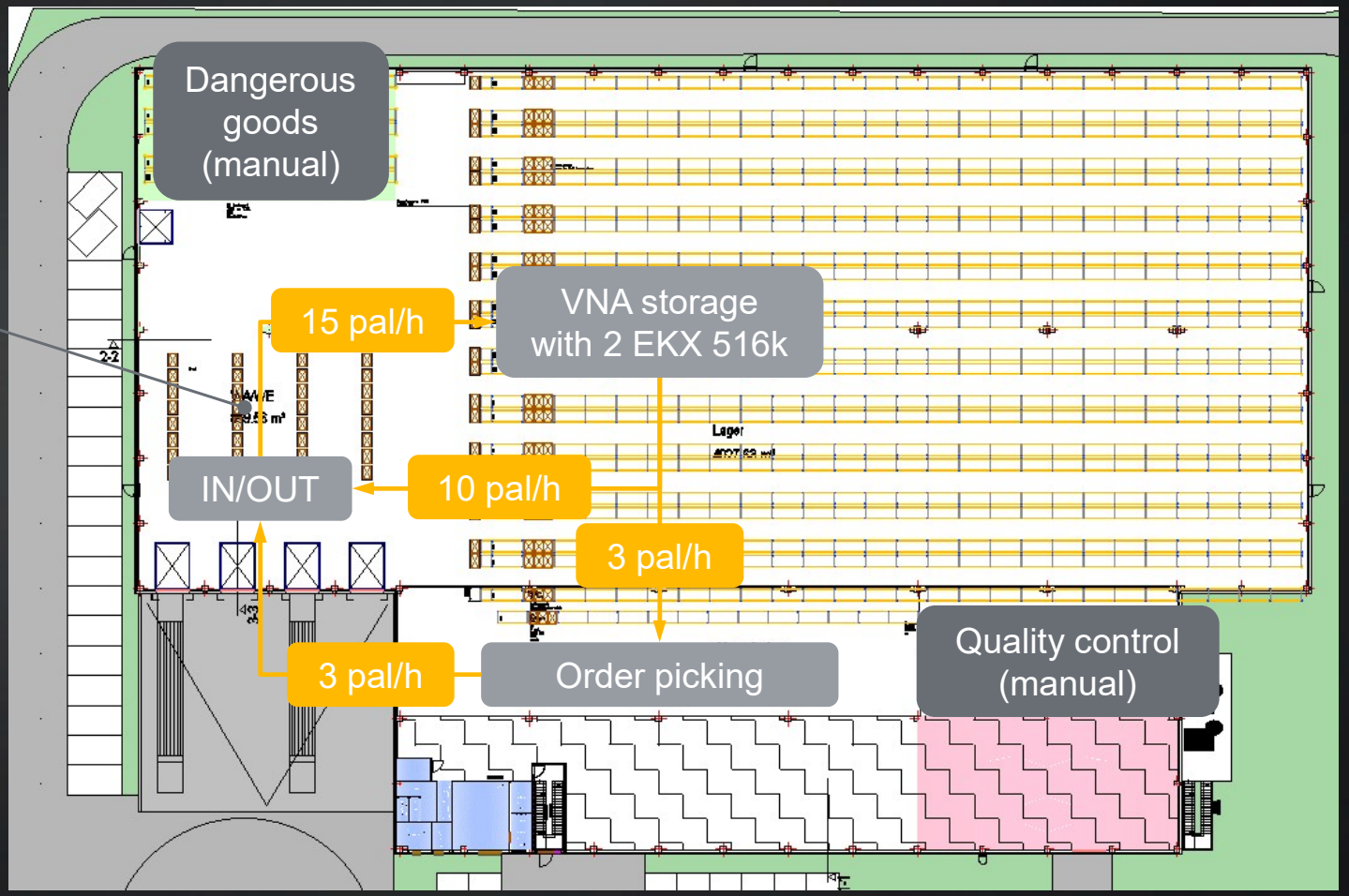
AMR arculee –
Jungheinrich Autonomous Mobile Robots

Use Cases
Underload Transport



Layout and Material Flow



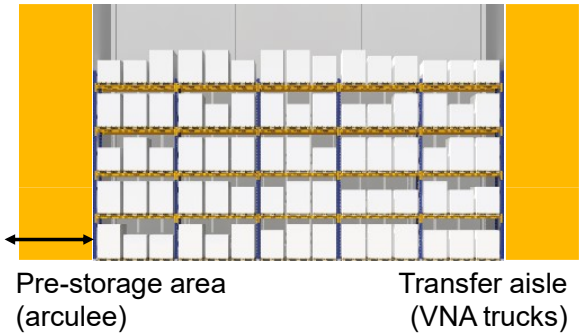


Project selection criteria
Manual VNA

Application

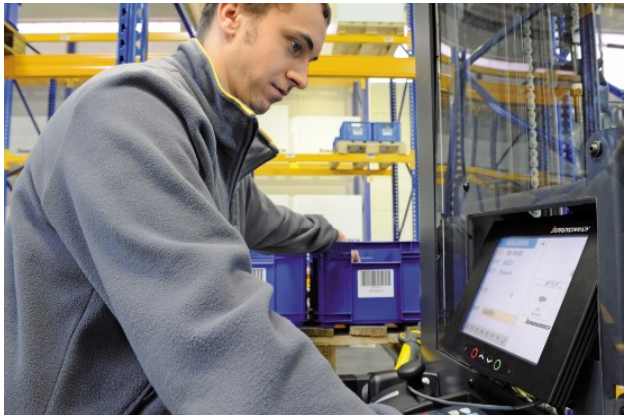
- Storage for production or value-added services
- Warehousing rather irrelevant, if transport from / to floor storage at inbound / shipping area

Transfer aisle



- Preferably separated from pre-storage area (less traffic, more performance)
- Transfer in pre-storage area also possible

warehouseNAVIGATION

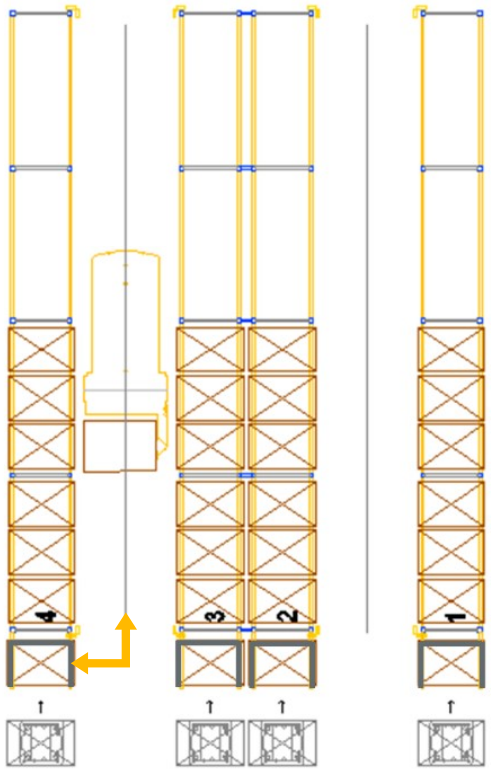


Indicator for mature IT and helpful to trigger transport orders by host system

Pallet crosswise double station

Project specific check required

layout handover area



Description:

- **1 pallet per rack** with backpack
- **Crosswise** transport of the pallet by the arculee S

Features:

- **No shared area** between arculee S and man. VNA vehicle
- Reduced risk of accidents due to only minimal interface between arculee S and VNA vehicle

Conditions for realization:

- Pallet backpack and transfer station required for crosswise pick up
- Risk assessment required (transfer area)

Feasible!
Project specific P+D station design required!

Solution

System design

- Transports and distances:

	Transports / h	Driving Distance
IN -> VNA storage:	15 transports / h	Ø ca. 40 m driving distance
VNA storage -> OUT	10 transports / h	Ø ca. 40 m driving distance
VNA storage -> order picking	3 transports / h	Ø ca. 60 m driving distance
VNA storage -> IN/OUT	3 transports / h	Ø ca. 50 m driving distance

- Static performance calculation results in: **3 arculee S** (incl. provision of empty tables)

- Number of tables:
  - 11 tables at VNA storage (1 per aisle)
  - 6 tables at order picking
  - 32 tables at Goods-in/shipping

Material flow control

- Logistics Interface with WMS connection
  - Customer WMS manages all table locations
  - Customer WMS sends transport orders with explicit pick-up and drop-off location

LOGISTICS INTERFACE

Budget price

Basic data arculee S	
Capacity	880 kg
Speed	Empty max. 2.5 m/s (with table up to 1.5 m/s)
Table dimensions	1,250 x 850 x 378 mm
Energy system	Li-Ion battery with automatic charging

Exemplary scope of delivery	
3x	arculee S
2x	Charging station
1x	Fleet Manager license
1x	Logistics Interface with standard interface to WMS
1x	Project mgmt, Engineering, Implementation on-site, Training, Documentation

AMR use cases

Underload Transport

- **Horizontal transport** of load carriers e.g. transport to/from storage areas, supply of production lines
- Adaptation to a **wide variety of loading aids** using specific load handling adapters
- Automatic picking up/depositing of load carriers on the floor or from/to the **transfer station**

Goods-to-person Order picking (G2P)

- **Supply of manual order-picking workstations** with goods and articles on movable shelves or in elevated boxes
- Particularly suitable for **e-commerce** and **logistics service providers (3PL)**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Jungheinrich PowerCube

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Unique
use of space.

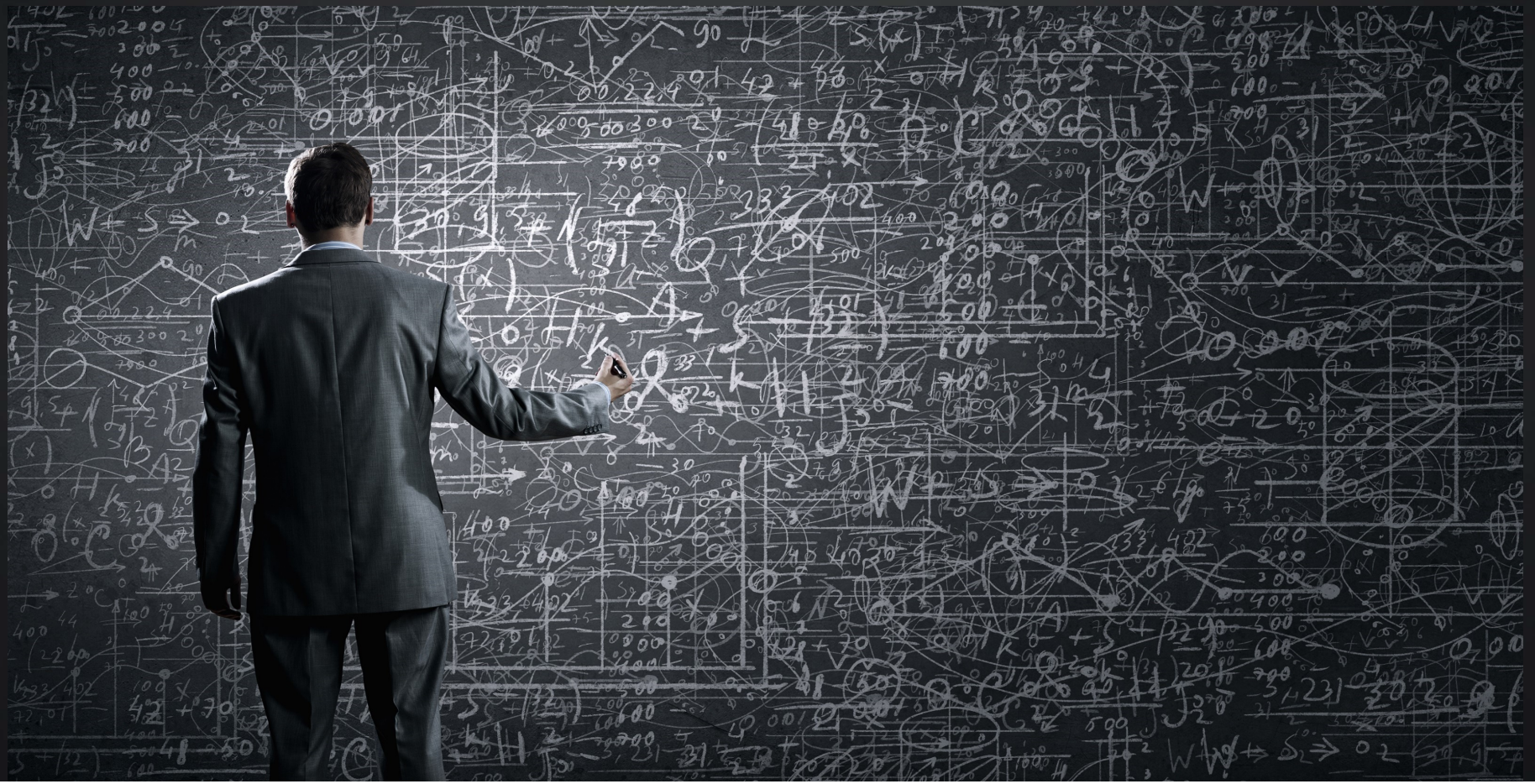
Maximum
flexibility.

Powerful
performance.

Easy
integration.

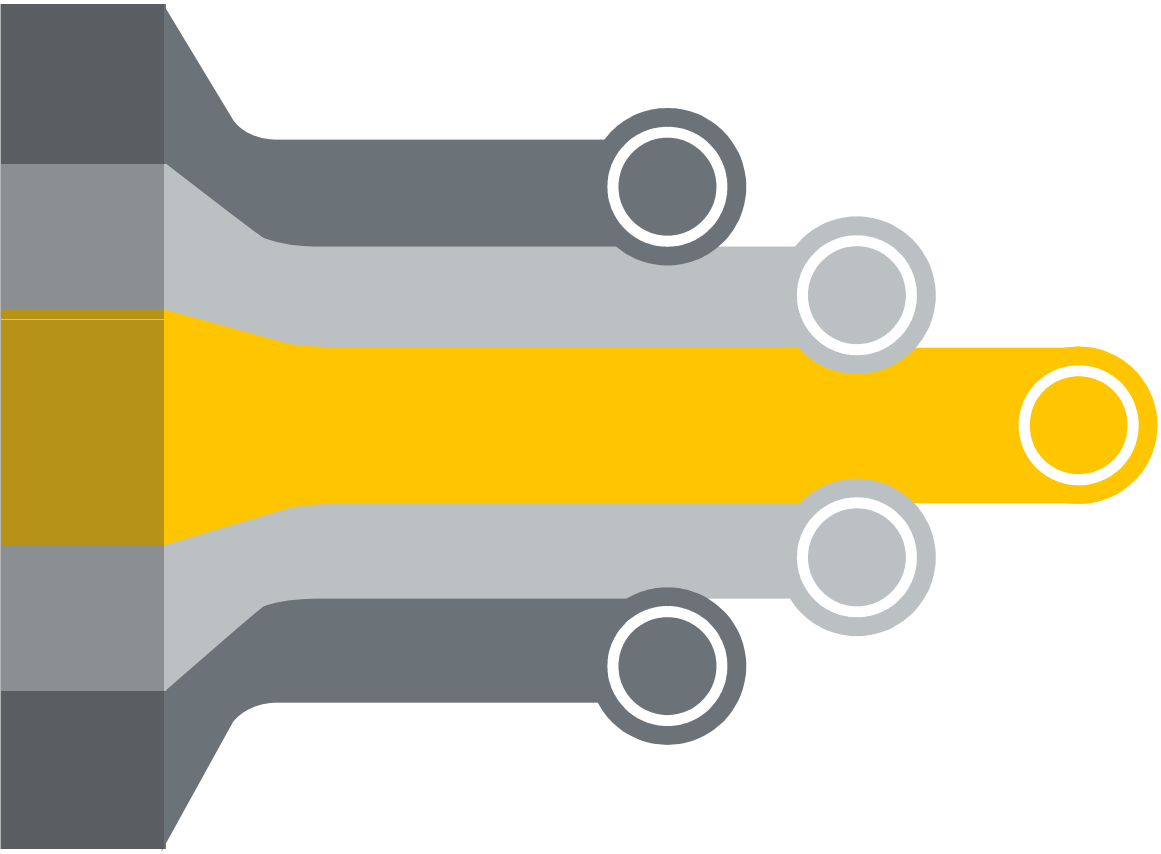
Digitalisation & Connectivity

Logistics 4.0
The Logistics Algorithmus



Logistics 4.0
Harmony in Logistics

Digitalisation & Connectivity



Thank you.
Any questions?

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