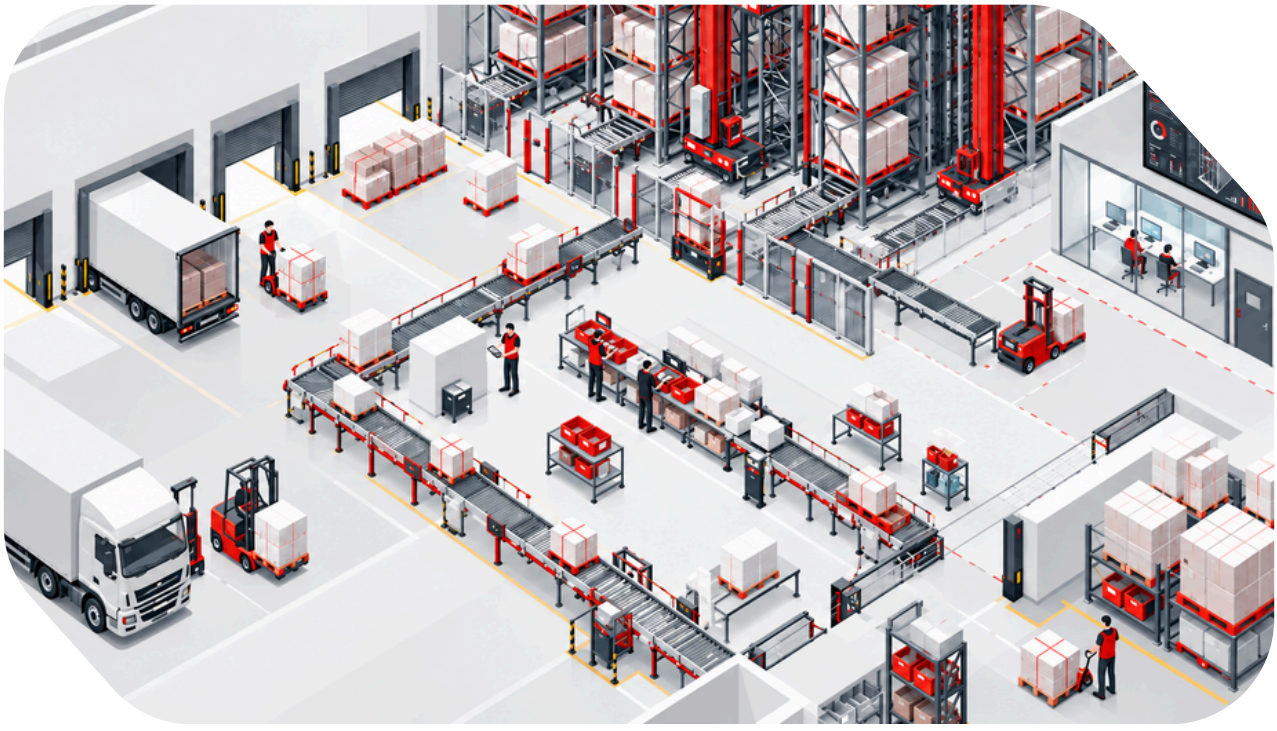
General Guide

CoreLogis

A Practical Guide to

Warehouse Automation & AS/RS

Understanding the technologies, applications and decisions behind an automated warehouse.



Consult. Design. Deliver. Support

Automation starts with a business problem.

Why this guide exists

Warehouse automation is not just about buying robots or the latest technology. It starts by understanding your operational **pain points**, the real challenges that affect your people, processes and **business performance**.

Space capacity
Limited warehouse space and the need to make better use of your available footprint.

Picking complexity
Increasing SKU variety, smaller order sizes and more complex fulfillment requirements.

Throughput bottlenecks
Inconsistent or insufficient throughput to meet demand, especially during peak periods.

Inventory visibility
Lack of real-time inventory accuracy and visibility across locations and channels.

Labour dependency
High reliance on manual labor, rising labour costs and difficulties in hiring and retaining staff.

Future growth
Preparing for business growth, higher customer expectations and greater operational resillience.

> **The right question is not "Which machine should we buy?" but "What operational problem are we trying to solve?"**



Warehouse Automation 101

What does warehouse automation actually mean?

Warehouse automation use combination of **equipment, software** and **data** to **move, store** and **manage** goods with **minimal manual effort**. It helps operations become **faster**, more **accurate** and more **efficient.**



Inbound
Goods arrive at the warehouse.

Identification
Items are scanned and identified.

Storage
Goods are stored in the right location.

Retrieval
Items are retrieved when needed.

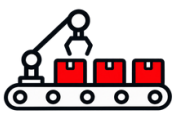
Picking / Production
Items are picked, packed or prepared for production.

Outbound
Goods are shipped to customers.





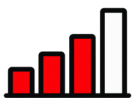
Storage systems
Automated storage and retrieval systems (AS/RS) keep goods organized and accesible.



Material handling equipment
Conveyors, shuttles, robots and other equipment move goods between processes.



Software and controls
Warehouse Execution Systems (WES), Warehouse Management Systems (WMS) and controls orchestrate the flow of goods.



Data visibility
Real-time data provides visibility, improves decision-making and drives continuous improvement.

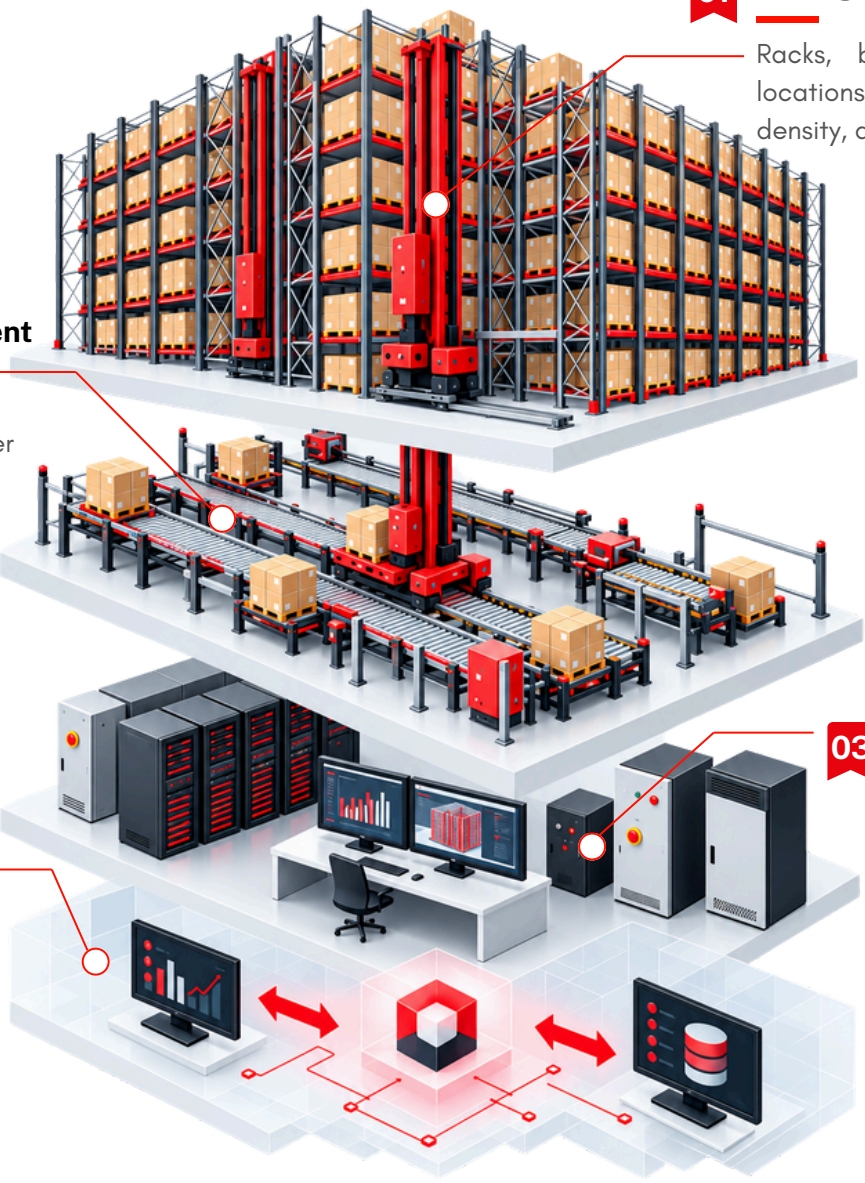


Automation can support one process area, such as storage or picking, or the entire end-to-end flow, **depending** on your **business goals** and **operational needs.**

What is AS/RS?

Automated Storage and Retrieval System, simply explained.

An AS/RS automatically **stores** and **retrieves** goods from defined storage locations, using a **combination** of storage **structures**, automated **equipment**, software **controls** and system **integration**.



01 Storage structure

Racks, bins and storage locations designed for high-density, automated storage.

02 Automated handling equipment

Cranes, shuttles, conveyors and transfer devices that move, store and retrieve goods automatically.

03 Controls / WCS

Warehouse Control System (WCS) coordinates and optimizes the movement of equipment, tasks and storage locations in real time.

04 WMS / ERP integration

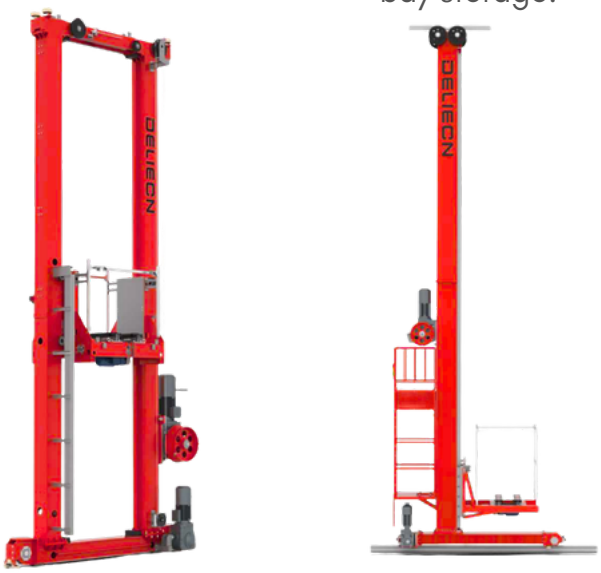
Connects with your WMS or ERP to exchange orders, inventory data and status information.

Types of AS/RS

Not every automated warehouse uses the same architecture.

Pallet AS/RS

For palletized goods and high-bay storage.

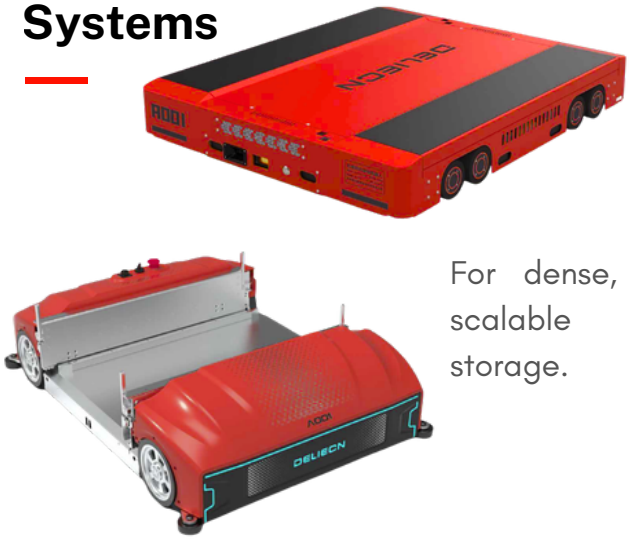


Mini-load AS/RS

For bins, cartons and small parts.



Shuttle Systems



For dense, scalable storage.

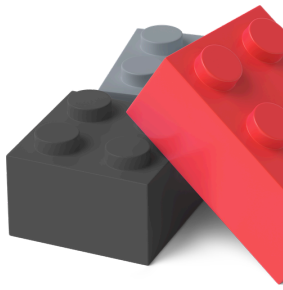
Vertical Storage



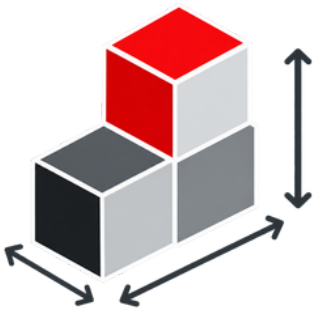


For compact storage of smaller items.

Where automation helps



Key warehouse pain points that automation can address.



Space capacity

Storage limits



Throughput bottlenecks

Slow order flow



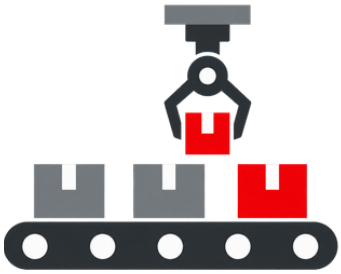
Labour dependency

Manual operations



Picking complexity

High SKU mix



Production logistics

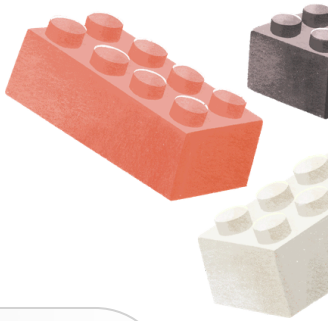
Line feeding delays



Inventory visibility

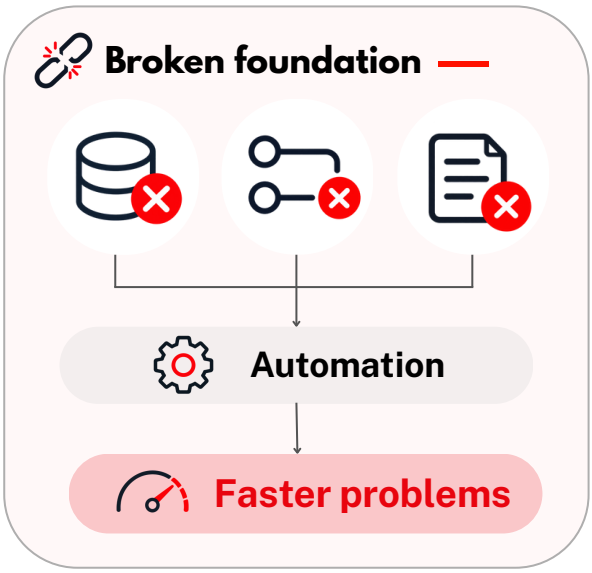
Low stock accuracy

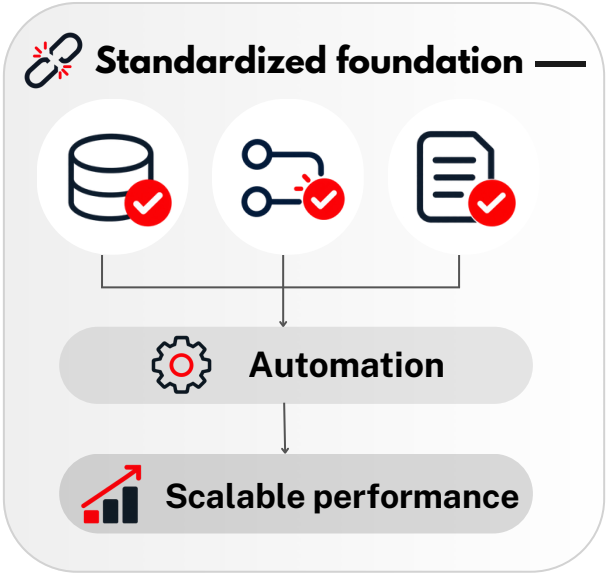
What automation cannot fix



Automation amplifies the process you already have.

A weak operation foundation does not become strong just because it is automated.





Design prerequisites

Process
Stable workflow

Data
Reliable master data

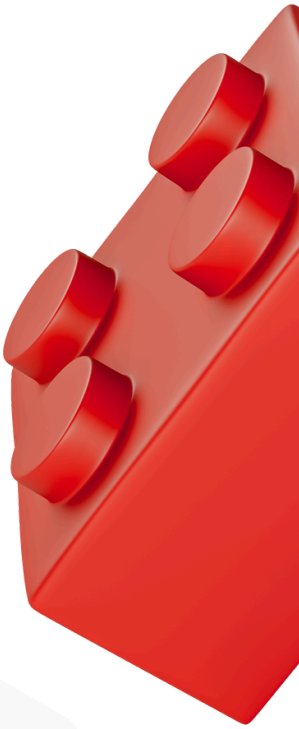
Inventory logic
Clear replenishment & allocation

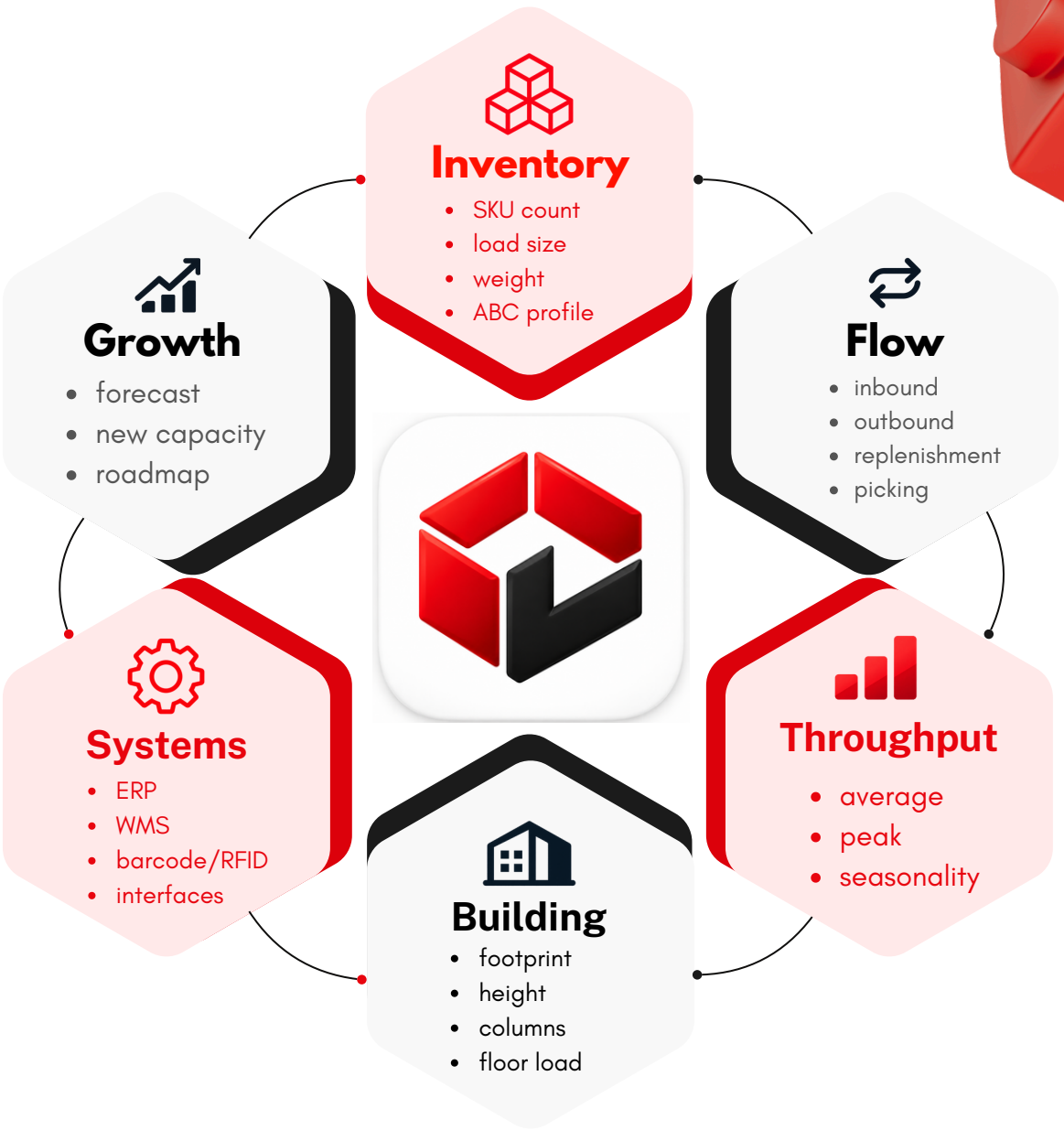
Demand
Peak requirements understood

Standardize first. Automate second.

What we need to understand first

The design basis.





How solutions are selected

Architecture before equipment.



Identify business gap.

Operational problem

High-density storage architecture.

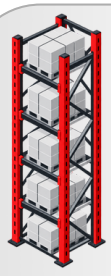
Need more pallet density

Translate into clear requirements.

Design requirement

Define the optimal system configuration.

Solution architecture



High-bay architecture.

Need more vertical utilization



Tote/mini-load architecture.

Need high-SKU small-part picking

Select the right technology partners.

Technology selection

Example decision

Stacker Crane or 4-Way Shuttle?

Different operating profiles lead to different architectures.

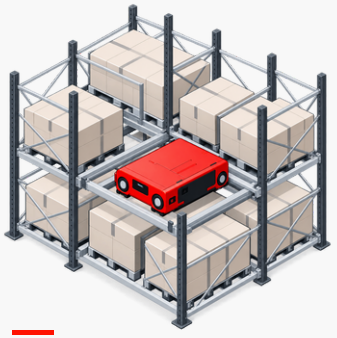
Stacker Crane



- **High-bay storage**
- **Aisle-based**
- **Best for structured flow**

Stacker Crane		4-Way Shuttle
Higher **vertical utilization**	**Height**	Flexible in **building height**
Aisle-based depth (**single-deep**)	**Storage density**	**Multi-deep** high density
Structured, predictable flow	**Flow pattern**	**Dynamic**, variable flow
Expand by **aisle** or additional crane	**Scalability**	Expand by **shuttle** or additional lane

4-Way Shuttle



- **Multi-deep storage**
- **High density**
- **Flexible flow**

> **Architecture follows the operation - not product preference.**



Software is the orchestration layer.

Automation is more than hardware.

Software translates business requirements into coordinated equipment movement.



Orders, sales and production plans	What to store, when and where	Coordinates tasks and optimizes flow	Executes commands and ensures safe operation	Cranes, shuttles, conveyors and other devices

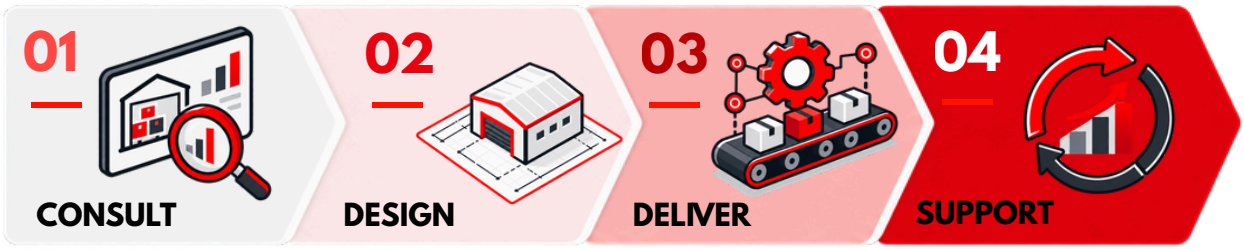




The CoreLogis approach.

A consulting-led approach to warehouse automation.

We understand your operation first, design the right architecture, integrate the technology that fits, and support performance over time.



- Operational assessment
- Flow mapping
- Bottleneck identification
- Data analysis

- Solution architecture
- Technology selection
- System configuration
- Business case evaluation

- Implementation planning
- System integration
- Testing & commissioning
- Go-live preparation

- Training & knowledge transfer
- After-sales support
- Performance monitoring
- Continuous optimization



Next step.

Start with a warehouse assessment.

Understand your current operation and identify the right AS/RS roadmap for your business.

What to prepare.



Warehouse layout

Key areas and space availability.



Load dimensions

Unit size, weight and packaging type.



Existing systems

Current software and integrations.



SKU profile

Number of SKUS and mix.



Throughput

Expected inbound and outbound rate.



Growth forecast

Expected volume and business plans.

What happens next



01 Share your data

Send us the key information.



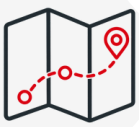
02 Review the operation

Analyse your current processes.



03 Define the opportunity

Identify suitable AS/RS options.



04 Prioritize the roadmap

Receive clear recommendations.

Start a warehouse assessment



Talk to a solution engineer