

Automation, Integration & Energy Systems

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Meeting the **Demand** for Automation

- The world is moving towards more automation, why?
- What are its effects on our daily lives, and livelihood?
- Across many industries, why are companies considering a change to their manufacturing, warehousing or distribution operations?

The World Is Talking About Automation

WILL ROBOTS TAKE YOUR JOB?

Quarter Of U.S. Workers At Risk

Thursday's report from the Washington think tank says roughly 36 million Americans hold jobs with "high exposure" to automation — meaning at least 70 percent of their tasks could soon be performed by machines using current technology.

**Chefs And Truck
Drivers Beware:
AI Is Coming For Your
Jobs**

"Researchers at the McKinsey Global Institute suggests that, across industries, there is already the potential to automate more than 30 percent of the tasks that make up 60 percent of today's jobs."

The World is Changing to Automation

The impact is visible across many products, industry types and sectors.

Automotive

- Self-driving
 - Vehicles
 - Cars
 - Commercial Vehicles

Restaurants

- Ordering
- Cooking Systems

Home

- Security
- Lighting
- Doors

Manufacturing

- Automotive
- Appliances
- Heavy Equipment
- Furniture

Warehousing & Retail Distribution

- Clothing
- Electronics
- Food & Beverage
- “SKU Explosion”

What is driving the need for automation?

Warehousing, Distribution & Manufacturing



Access to a sufficient labor pool and scalability



High cost of labor and related costs



Supply chain optimization and process improvement



Safety

Calculating Your ROI



Approximately 80% of the total cost of ownership is directly related to the “operator on board”.



Capital Costs

\$40,000
(capital purchase)

\$40,000 one time

Labor Costs

\$15.00 per hour
2,000 hours per year
Single shift

Hourly rate x 35%
benefits / burden rate

\$40,500 annually



- Damage
- Service
- Training
- Retraining
- Errors

Cost Over 5 Years

$(\$40,500) \times 5$

\$202,500



- Damage
- Service
- Training
- Retraining
- Errors

Automated Technology Solutions

Full Automation



Primary Uses

Routine, repeatable and predictable tasks

Example Technology

AGV Horizontal Transportation

AGV Stacking or Interfacing with Racking

Semi - Automation

Primary Uses

High storage density;
Increased productivity

Example Technology

Warehouse Navigation

RFID Transponders



Implementing Automation Into Your Application

Processes typically have **routine, predictable and repeatable movements.**

Automation considerations:

- Loads / units being handled
- Volume or throughput
- Temperature
- Floor conditions
- Space requirements
- Number of shifts
- Labor content
- Warehouse Management Software (WMS)



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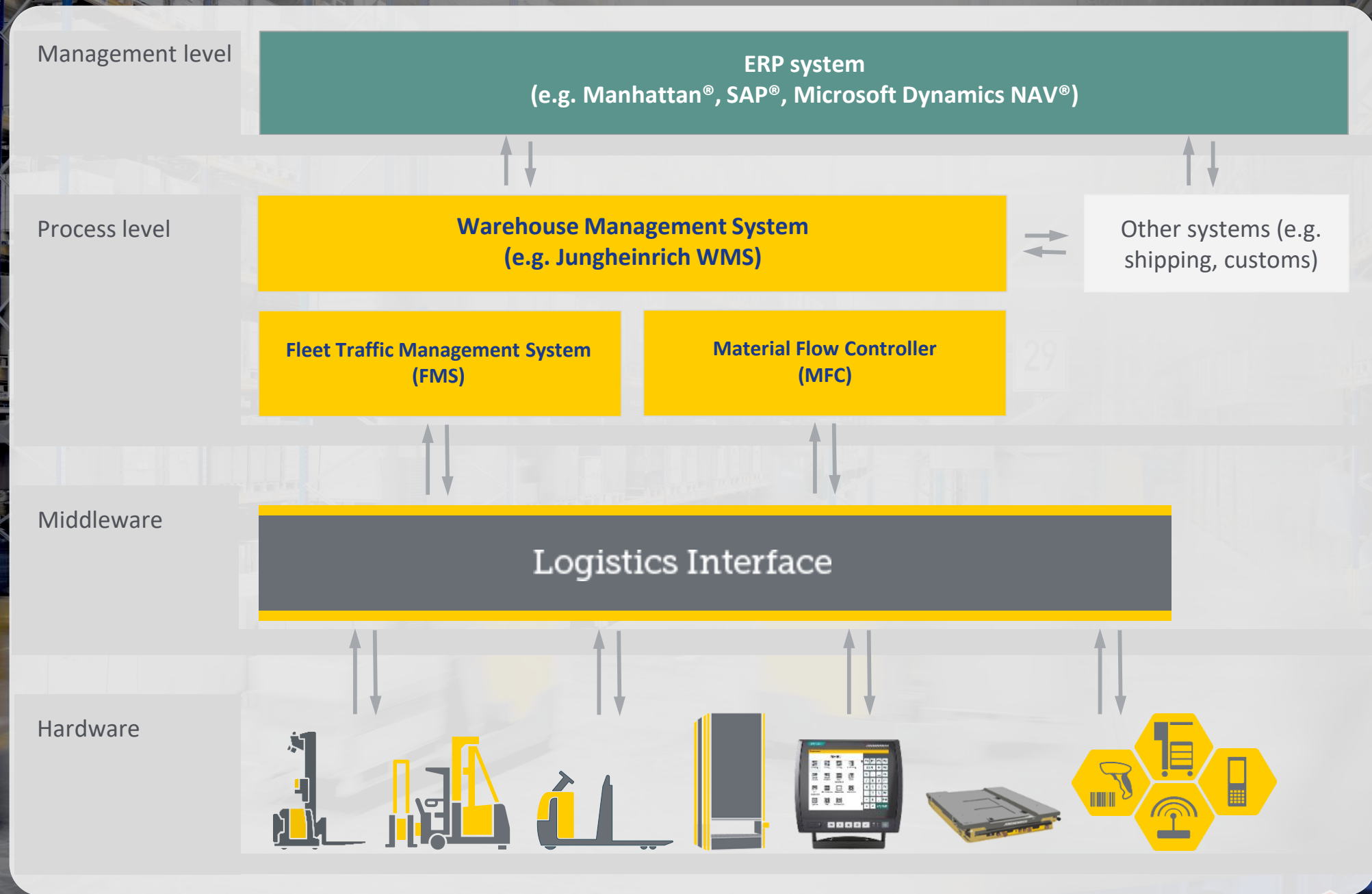
AGV Safety Video



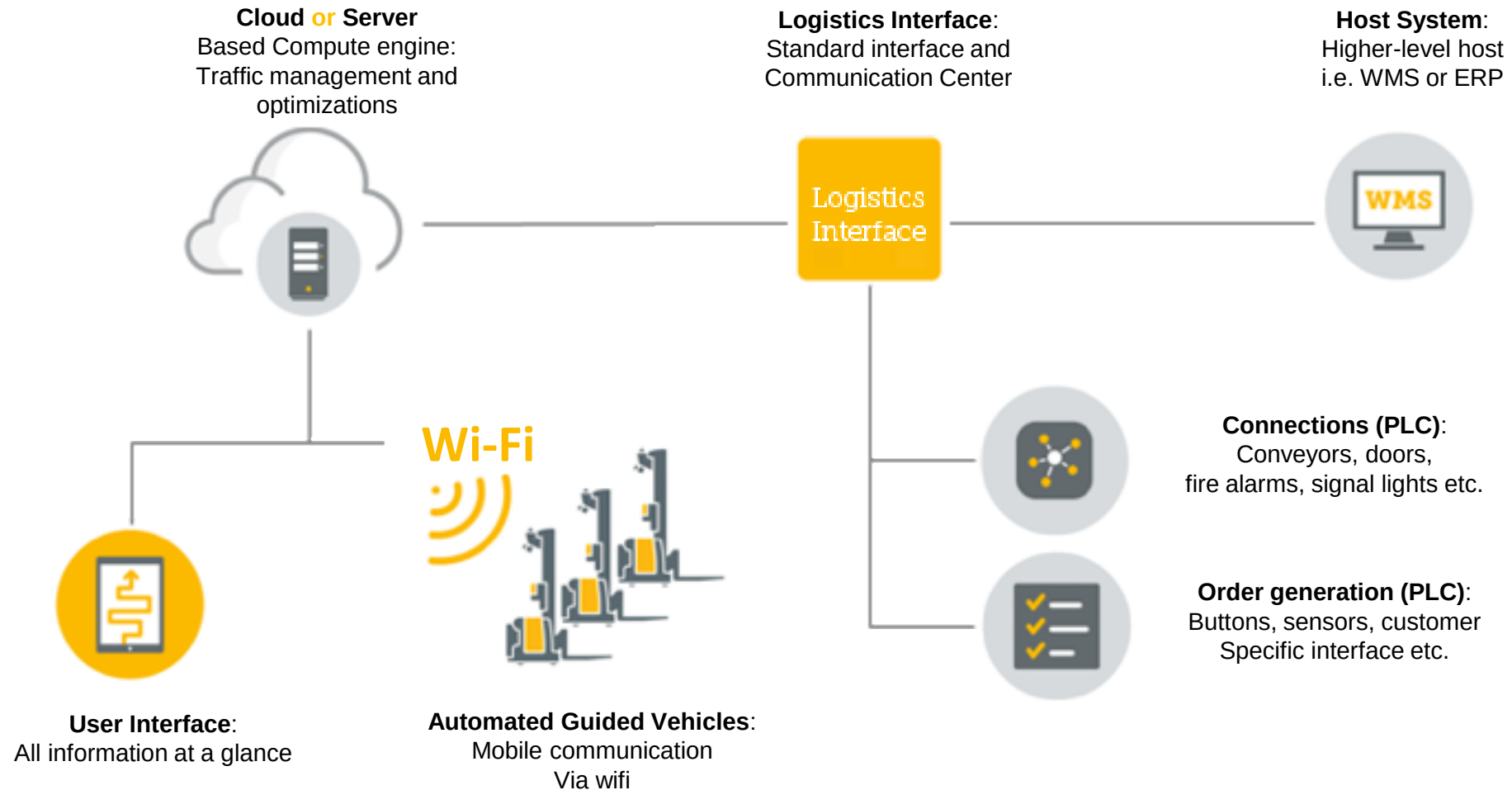
[YouTube Link](https://youtu.be/FSyz57OfX0s): <https://youtu.be/FSyz57OfX0s>



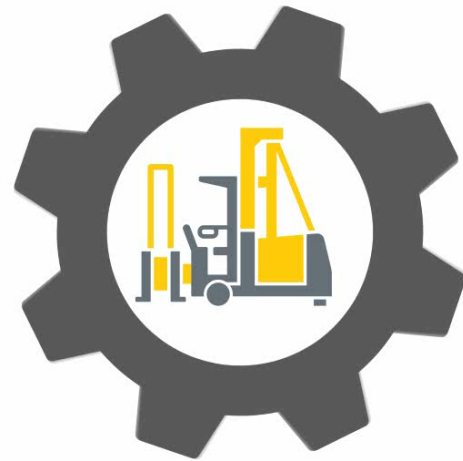
- Only a solid and stable integration makes your automation solution feasible
- In the world of the “Internet of Things (IoT)”, a Logistics Interface as middleware between the different Logistic Solutions is more important than ever



System Structure



The Logistics Interface is connecting systems!

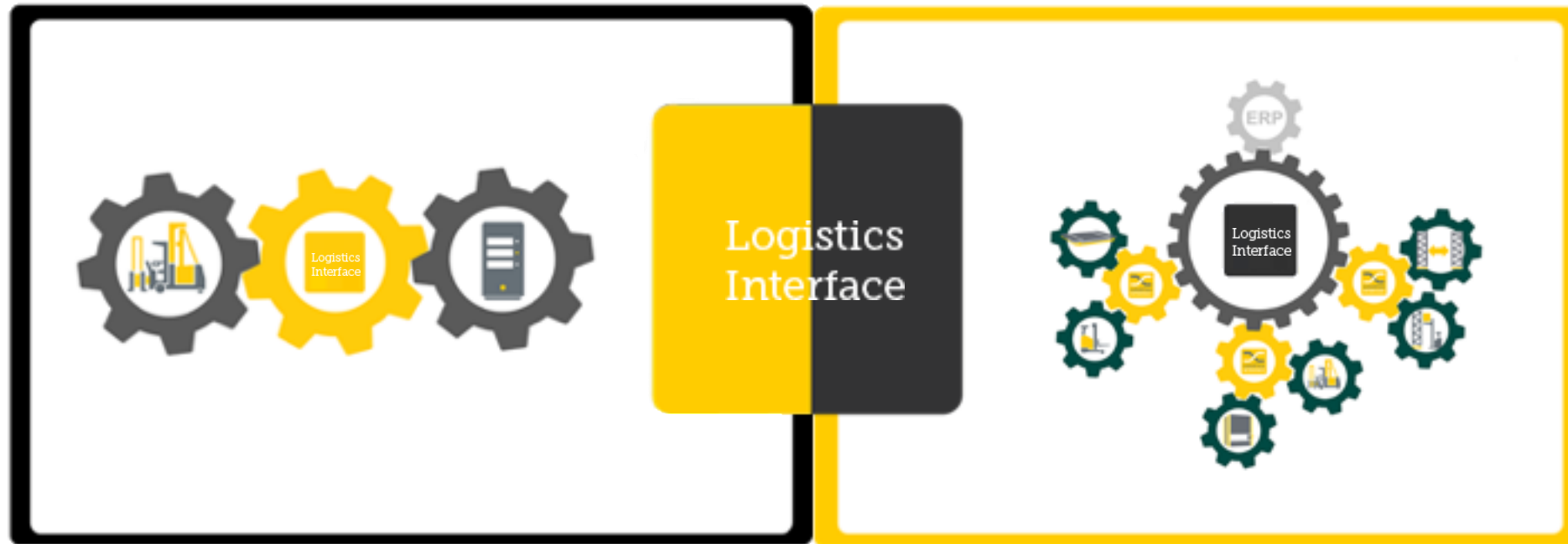


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Overview

IoT CONNECTOR

Process MANAGER



1. Simple and efficient communication between hardware (*forklift, shuttle, AGV, vertical lift system, etc.*) and any ERP or WMS – **Logistics Interface as IoT Connector**
2. Intelligent and autonomous solutions – *even without ERP or WMS* – **Logistics Interface as Process Manager**

Logistics Interface as IoT Connector

IoT CONNECTOR



- Runs de-centralized e.g. on Radio Data Terminals (RDT)
- Direct connection to the warehouse devices
- Connection to the WMS
- Carries out the tasks sent by the WMS
- No permanent data storage

Logistics Interface as IoT Connector

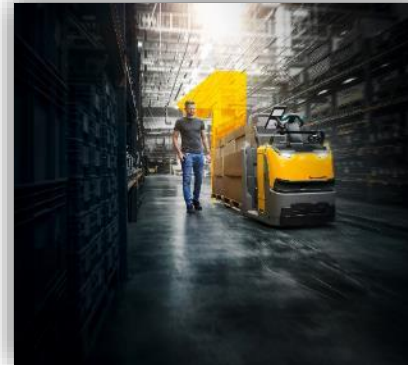
IoT CONNECTOR



Turret Trucks and
Order Pickers



Reach Trucks



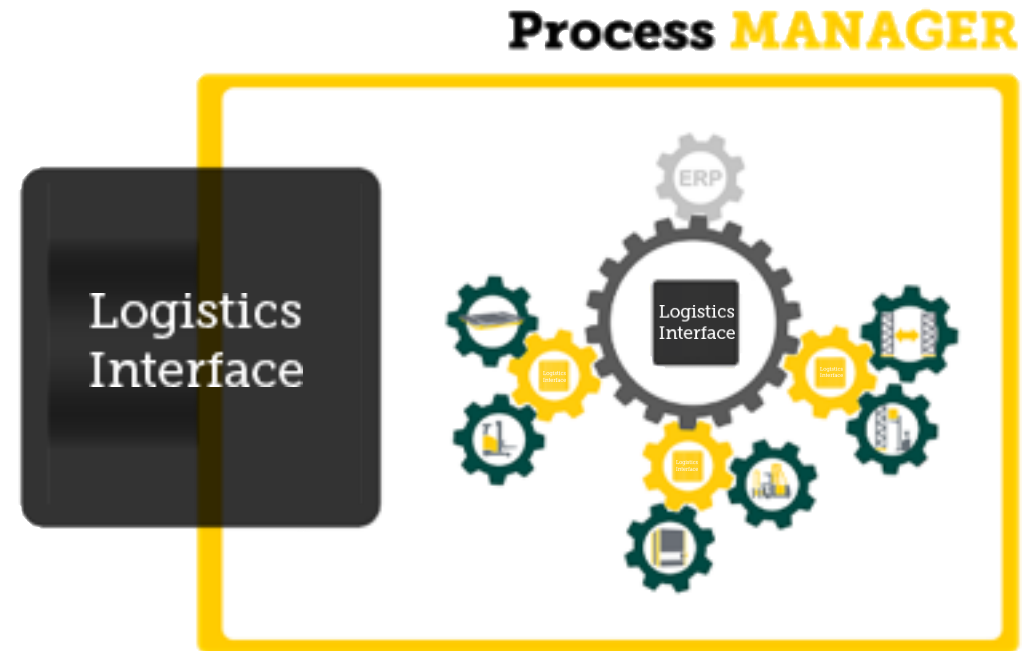
Low Level Order Pickers and
Tuggers



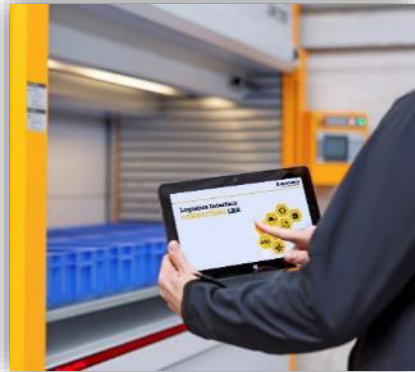
High Density Storage
Systems

Logistics Interface as Process Manager

- Runs on the client's server or in the Cloud
- LAN or Wi-Fi connection to the devices
- Connection to WMS or ERP
- Able to autonomously create orders and manage warehouse locations
- Can be used without host system
- Permanent storage of information in databases



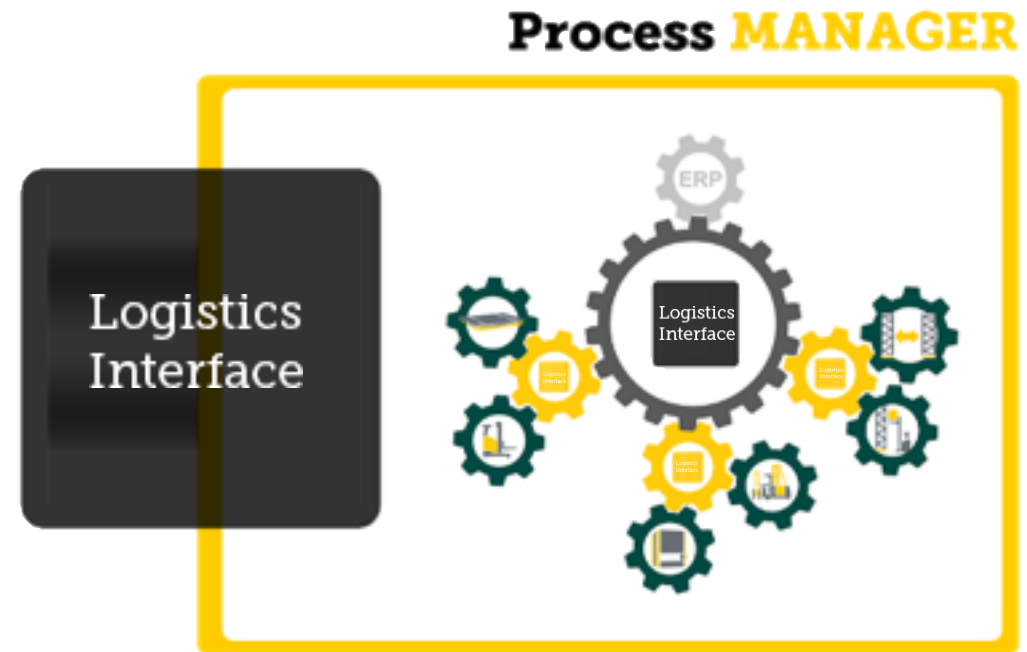
Logistics Interface as Process Manager



Vertical Lifts



Automated Guided Vehicles
(AGV)



Energy systems to meet your needs



Shorter charging times | Long-lasting | Less maintenance

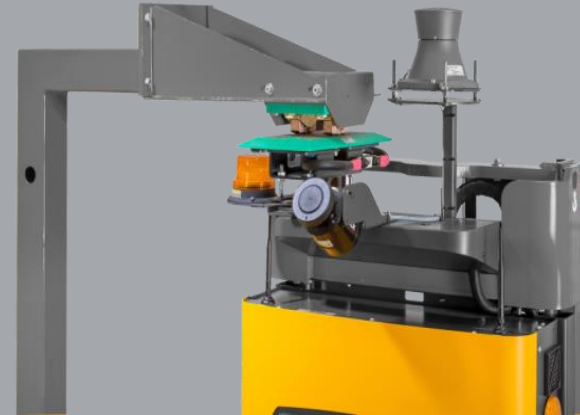


Lead acid batteries capable of running two shifts on one charge

Lead-Acid Changing



Lithium Ion / Lead Acid Automated Charging



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Project Checklist



Make sure to ask your vendor about ...

- Products: Standard vs. Custom
- Optional Energy Solutions (Lead-Acid vs. Li-Ion incl. automatic charging)
- IT integration
- Energy System: are you able to run two shifts on one charge?
- Service Network and Parts availability
- 24/7 Software Engineering Support

... to benefit from

- Proven high-volume production models applied to customized application solutions
- Intermediate charging, no manual intervention, less maintenance
- Not being left alone to coordinate the systems
- Big impact on ROI, energy efficiency = less cost and “green” image
- Guaranteed uptime, system reliability
- Avoid wasting time in non-productive call centers

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