

Körber Supply Chain

Master Class Series

Today's Class:

**Addressing new
market challenges with
Autonomous Mobile
Robots (AMR)**



Speakers



Thomas Goldsby

Professor

Dee & Jimmy Haslam Chair in Logistics
The University of Tennessee Knoxville



John Santagate

VP - Robotics
Körber Supply Chain

Supply Chain Master Class: Addressing new market challenges with Autonomous Mobile Robots (AMR)



Ecommerce and omnichannel shopping have permanently altered market dynamics and buying behaviors. Fluctuating order volumes, a tight labor market and rising customer expectations mean that warehouses and DCs have to operate more efficiently than ever before. In this master class, we will explore how Autonomous Mobile Robots (AMR) can help your warehouse operations scale to address these challenges.

Class Schedule

- **Nov 16:** Making the most of AMR: use cases and technologies
- **Nov 23:** Off to a good start: Achieving a smooth AMR rollout
- **Nov 30:** Debunking common myths about AMR

Master Class Series – On-Demand

- Addressing Labor Challenges
- Cold Storage Trends
- Warehouse Technology Excellence
- Sustainability
- Innovative Technologies

**Sign up to the
rest of the series**

Housekeeping

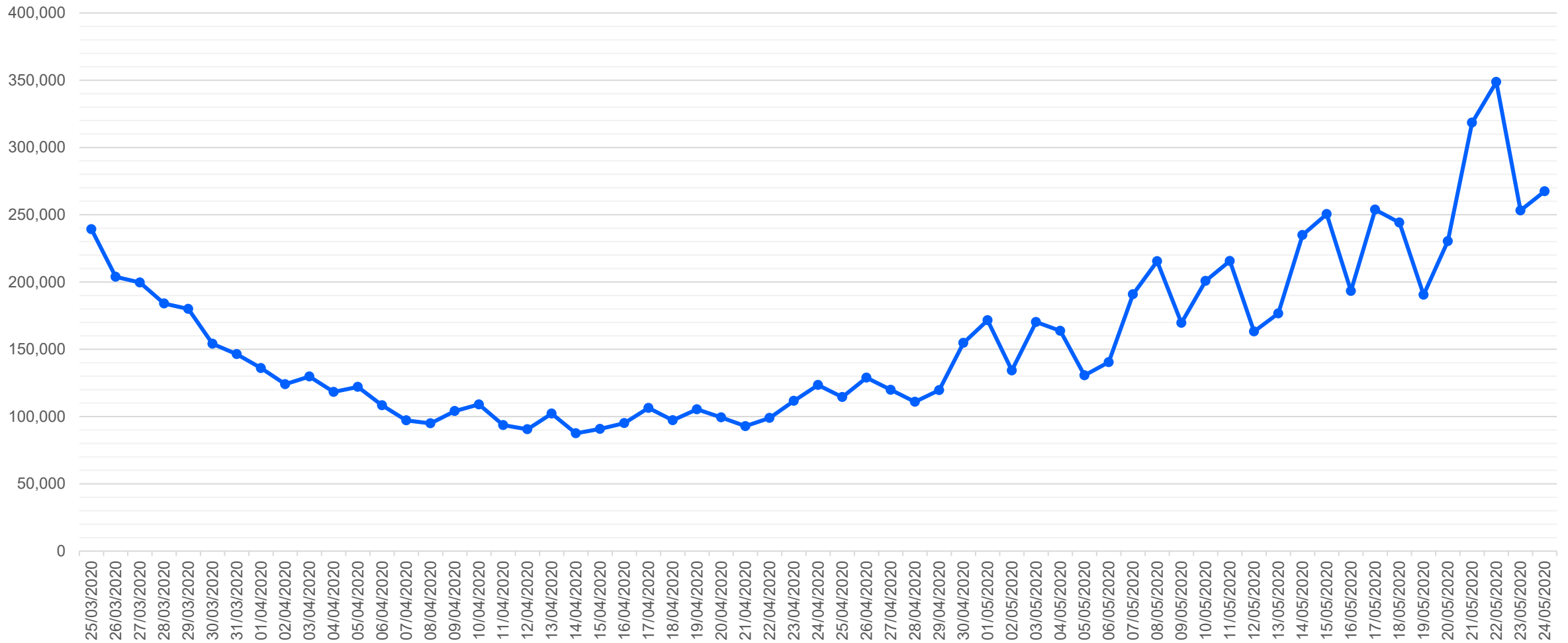
General information

- All phone lines are muted to avoid disruption.
- A recording of today's class and slides will be emailed to you within 48 hours.

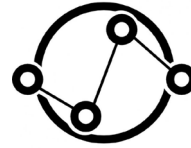
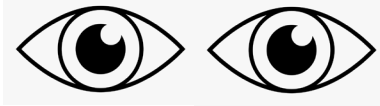
Questions

- Ask questions during today's class in the GoToWebinar Questions window
- Questions will be addressed at the end of today's class, or we will follow up with answers post-webinar via email.

Demand Volatility



Advanced technologies that can help

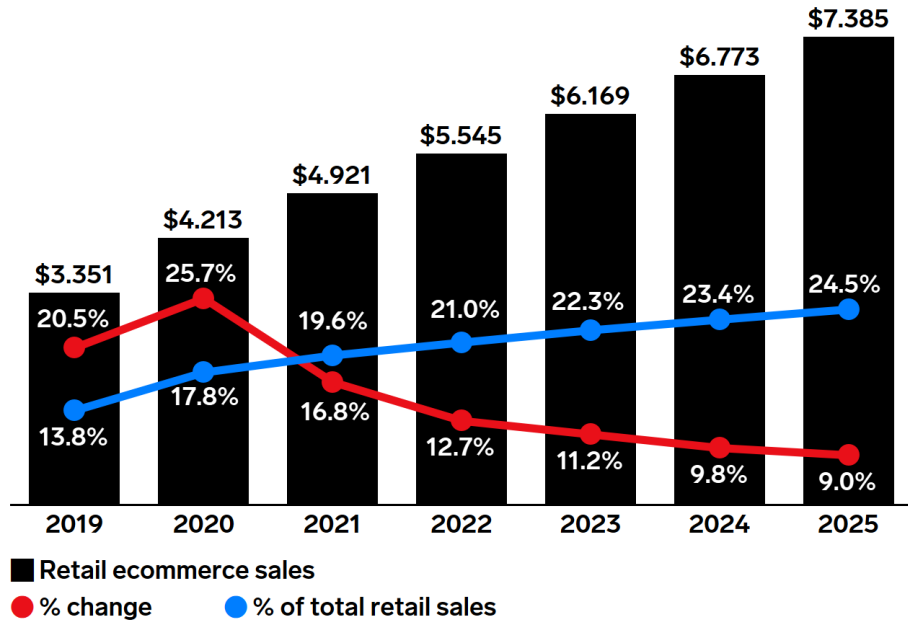


SEEING	THINKING	ACTING
illuminating product and process flows across the enterprise and throughout the supply chain	Making connections (obvious and not) faster than human logic	Employing non-human labor to assist or autonomously perform work processes
End-to-End Supply Chain Visibility	Artificial Intelligence	Autonomous Operations
SaaS & Cloud-based systems	Machine Learning	Collaborative Robots (“Cobots”)
RFID, Internet of Things, & 5G Connectivity	Descriptive Analytics	3D Printing
Supply Chain Event Management, Blockchain	Predictive Analytics	Mass Customization

Growth in Ecommerce Spending



Retail Ecommerce Sales Worldwide, 2019-2025
trillions, % change, and % of total retail sales



Note: includes products or services ordered using the internet, regardless of the method of payment or fulfillment; excludes travel and event tickets, payments such as bill pay, taxes, or money transfers, food services and drinking place sales, gambling, and other vice goods sales
Source: eMarketer, May 2021

T11547

eMarketer | InsiderIntelligence.com

Impacts

- SKU Proliferation
- Fulfilling of eaches vs case load or pallet load
- Demand volatility – seasonal spikes
- Labor requirements to keep up with demand

Supply and Demand imbalance relates not just to product but to service and this growth is driving an imbalance relative to labor to deliver to this demand.

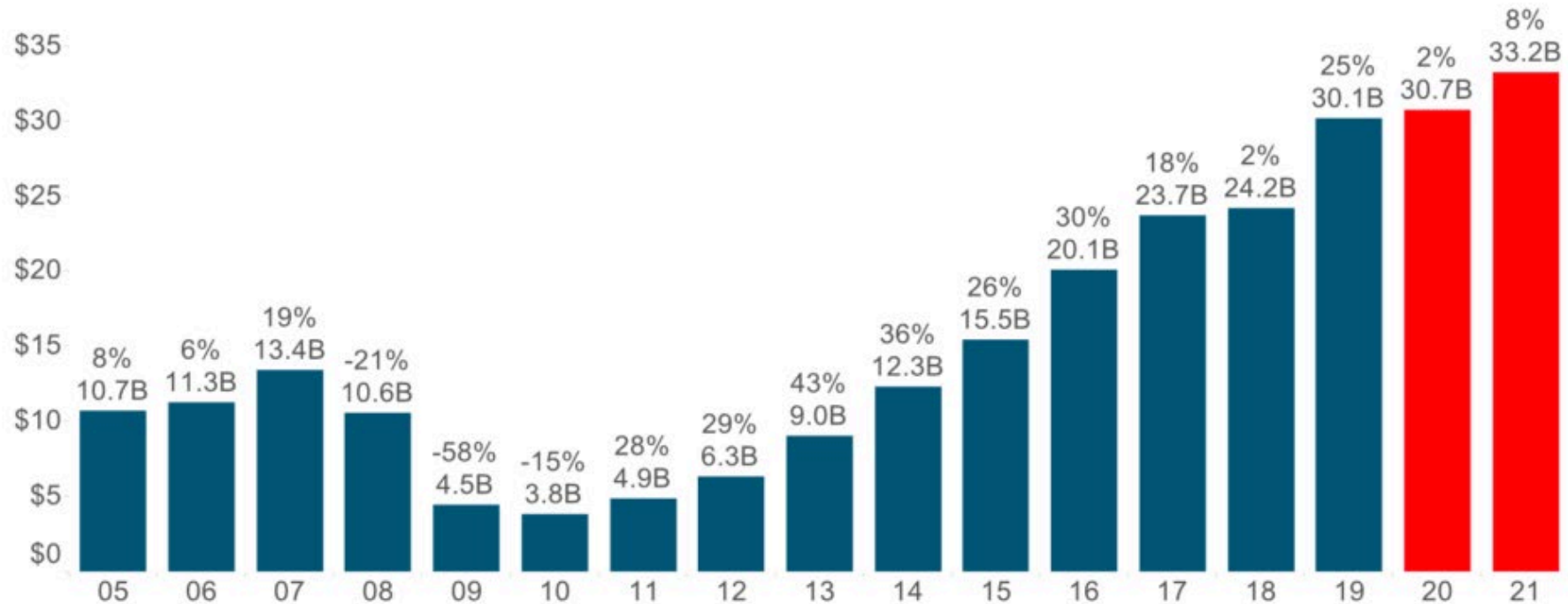
Investing in Warehousing Capacity



U.S. Warehouse Building Starts

Warehouse construction expected to break records

Warehouse Construction Starts
(Billions of Dollars)



Source: Dodge Data & Analytics

#DodgeOutlook21

Labor Challenges

Business

Warehouse jobs — recently thought of as jobs of the future — are suddenly jobs few workers want

The nation's warehouses are facing a shortage of workers just as they're trying to ramp up for the holidays. 'We are overwhelmed, understaffed and without applicants.'

[Listen to article](#) 6 min



Companies across the country are scrambling to fill warehouse jobs ahead of the crucial holiday season. (Luka Sharrett/Bloomberg News)

By Abha Bhattacharj

October 11, 2021 at 12:18 p.m. EDT



1. Labor Scarcity
2. Reliability: No-Call / No-Show
3. Training
4. Retaining
5. Quality
6. Cost

“Walmart is looking for 20,000 logistics workers ahead of the holidays, while UPS, Kohl’s and Target are planning to hire about 100,000 apiece. But labor experts say actually finding those employees will be tough in a labor market where there are already more job openings than unemployed Americans.”

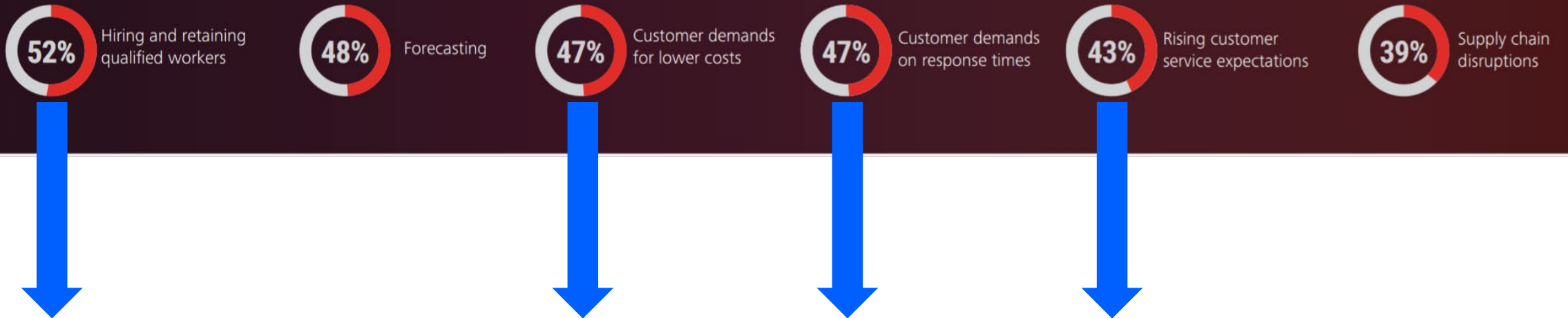
2021 MHI Industry Report Alignment to



2020 was a year of severe disruption. How are companies responding, recovering, and thriving to that disruption?

COMPANY CHALLENGES

The top 6 company challenges - rated extremely or very challenging

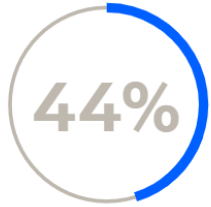


4 of the top 6 challenges identified by the 2021 MHI Annual Industry Report can be directly addressed with the help of flexible automation solutions leveraging AMR's

Addressing the Labor Challenge With AMR

Why AMR?

Labor shortages are a major challenge for manual jobs:



of warehouses have 10–20% staff turnover annually



1-5 applications for each open position



of applicants don't have relevant experience¹

AMRs can help make up the shortfall by doing the more labor-intensive, dirty and dangerous warehouse tasks.

Seasonal peaks affect every warehouse, in every sector:



of total annual sales happen during sector peaks²



of warehouses are at 100% capacity in normal periods³



of staff are expensive temporary “peak” workers⁴

AMRs are an affordable way of taking off the pressure, when needed.

“We would not be able to keep up with volume, without the addition of the robots .”

Theron Neese

Chief Supply Chain Officer, Integrated Supply Network

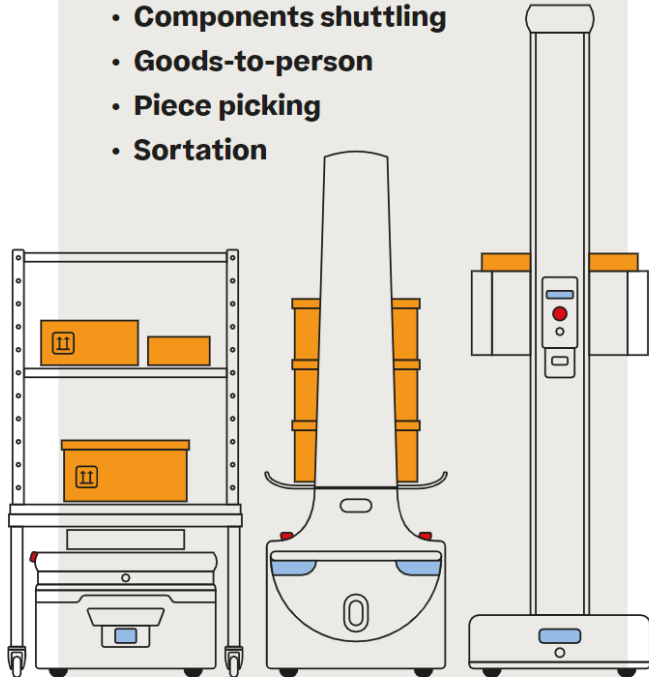


What Do AMR's Do and What is the Value?

What do AMRs do?

AMRS are not designed to replace people, to make the jobs of existing people easier and safer.

- Put-away and replenishment
- Bulk material movement
- Components shuttling
- Goods-to-person
- Piece picking
- Sortation



AMR benefits

Autonomous Mobile Robots have recently seen venture capital investment of

\$360 million

This is due to warehouses finding them:



Affordable and flexible



Highly scalable



Easy to integrate

With big gains in:



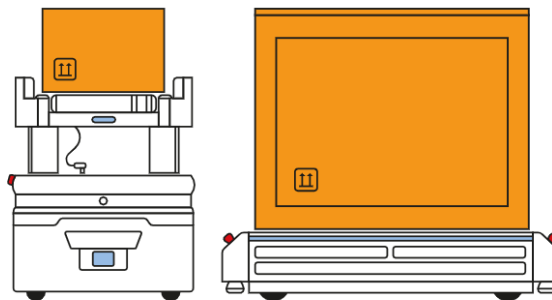
Efficiency



Productivity



Accuracy



266%

Increase in productivity

106

Days for implementation

110

UPH achieved

Improved employee wages and working conditions

- **266% improvement to picking speeds**
- **Only 4 months to go live**
- **Improved quality and reduced training time**
- **Increased wages**
- **Reduced turnover**

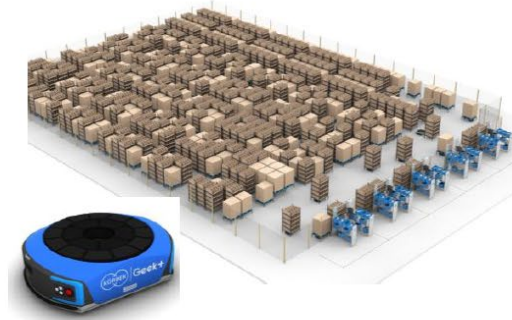
A View on Automation & AMR's



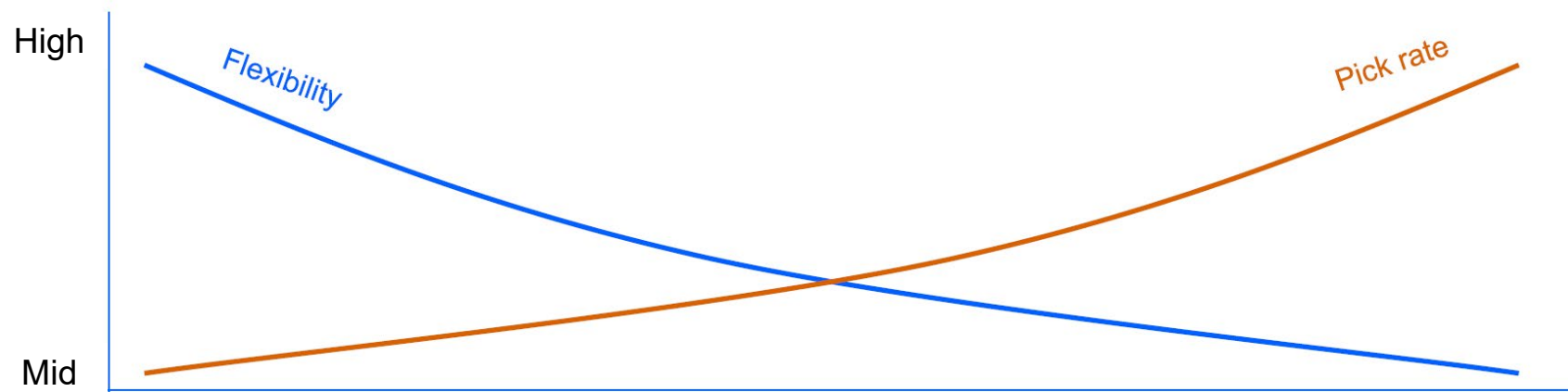
Person to Goods



Goods to Person



Shuttle



Key Benefits at a Glance



Affordable and flexible

Low-cost entry with little or no infrastructure impact. Robots are flexible and versatile and can perform multiple functions.



Easily scalable

The system can grow with you or scale up or down as needed, short- or long-term.

There are options to cover seasonal peak by temporarily lease of additional robots



Smooth integration

The AMRs integrate easily into existing systems. Interfaces are built to delivering a constant stream of operational data the back into the warehouse and logistics systems.

The Future of AMR's in the Warehouse



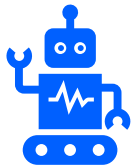
Rapid growth – fueled by Covid-19 related e-commerce evolution



Increased emphasis on software related elements



People remain the most flexible resource in the warehouse



RaaS model enables ability to keep up with the latest in the tech

Questions & Discussion

Next Supply Chain Master Class



Making the most of AMR: use cases and technologies

Autonomous mobile robots (AMR) are one of the hottest new technologies in warehouse operations. But what are the best applications for AMR, and how can your warehouse benefit from them? Join Matt Gregory to learn about typical use cases, different types of AMR and the best fit for common workflows like goods-to-person and person-to-goods.

Contributor:

Matt Gregory

Managing Director – Northern Europe,
Körber Supply Chain Software