

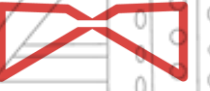


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# The Application Prospects Of Shuttle Robots

HWArobotics PTE. LTD.

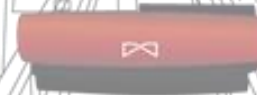
Julie Sun



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# Contents

- 1 Pallet Shuttle Robot
- 2 Tote Shuttle Robot
- 3 All In Shuttle





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01

# Pallet Shuttle Robot



# Evolution-Pallet Shuttle



VNA



Two-way 2003

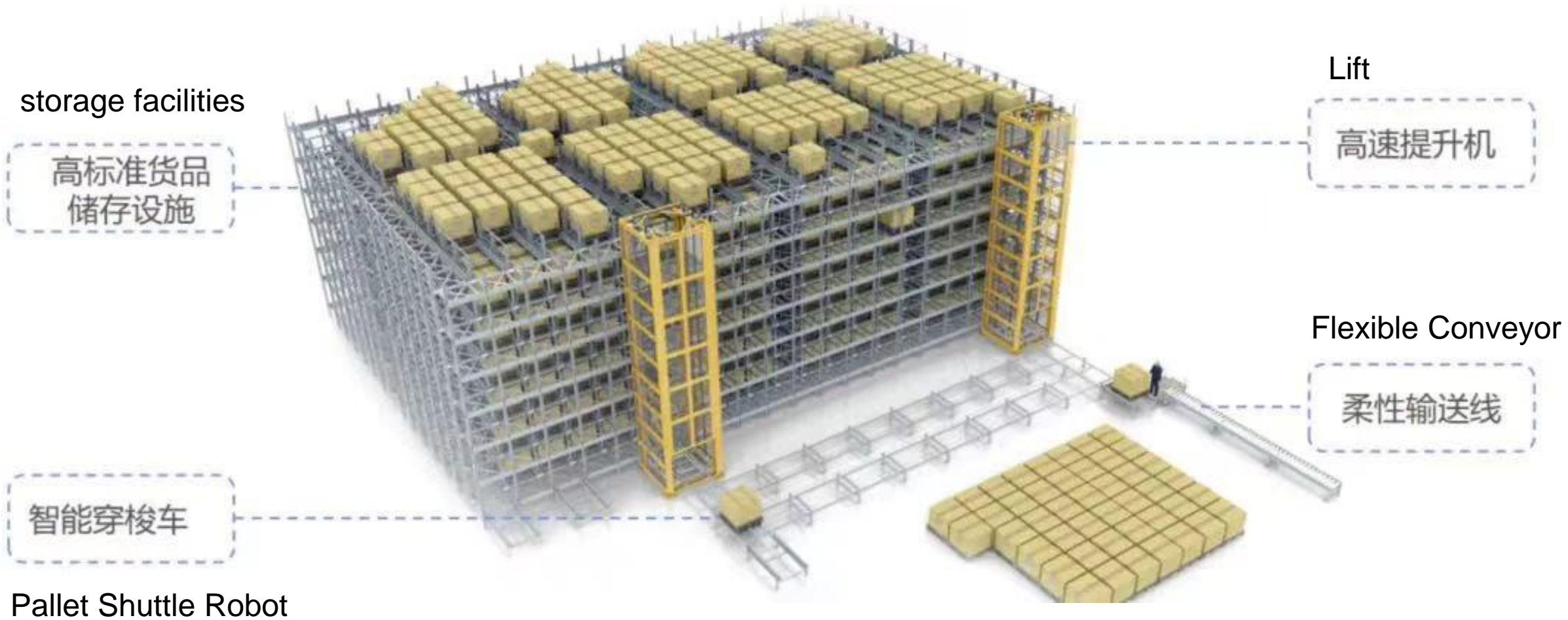


Master & Slave



Four-way

# Components



# Application-High Density Storage



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Cold storage



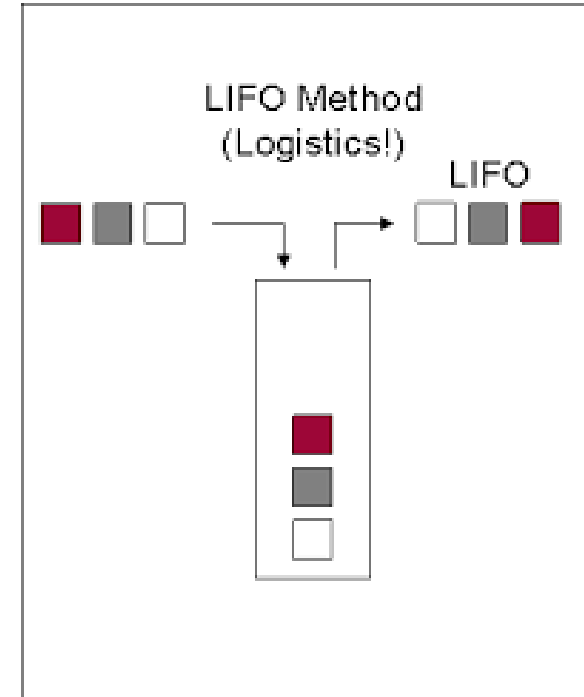
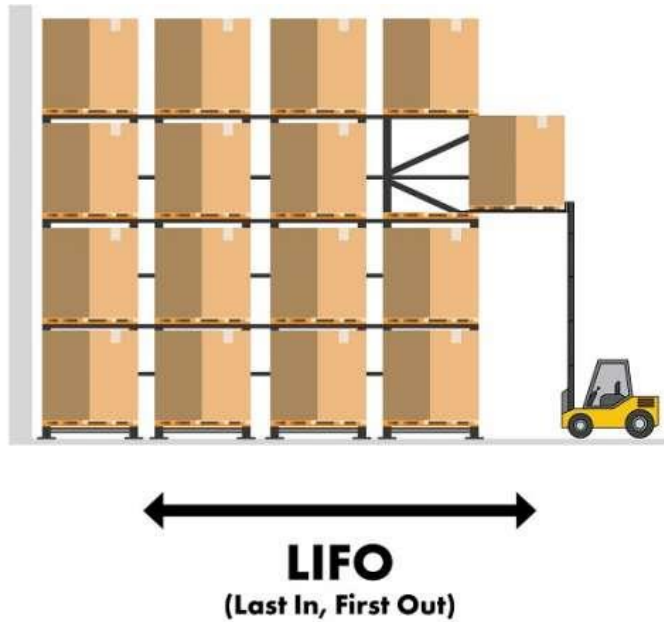
Facilities with many  
pallets per **SKU**

Warehouses with massive  
inbound/outbound flows

# Constraints!



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LIFO model makes availability of orders more difficult



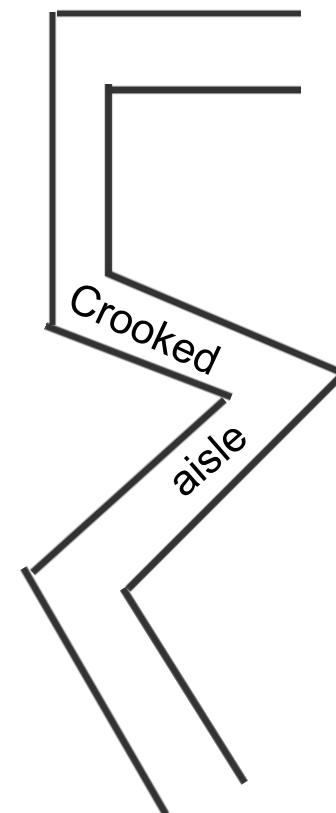
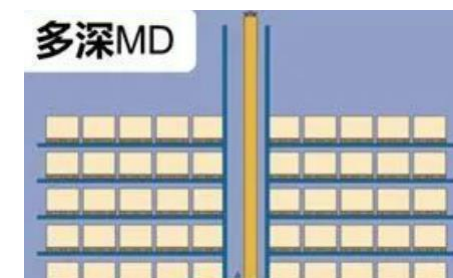
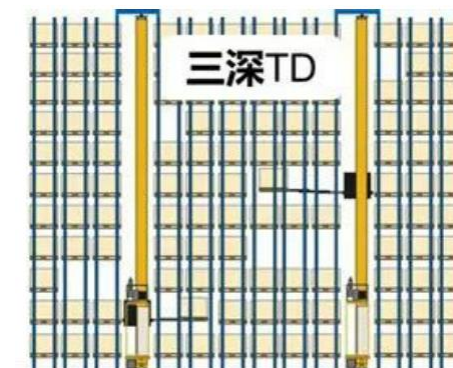
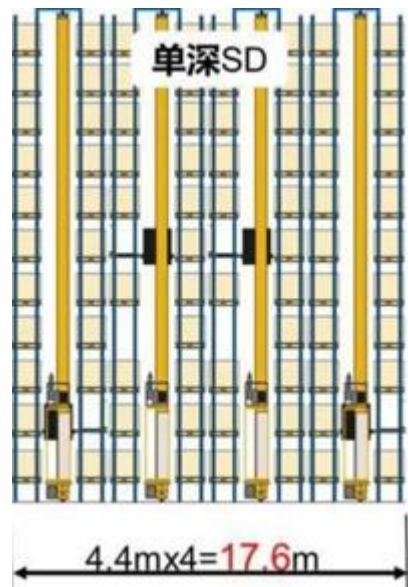
- ◆ Scheduling complexity
- ◆ The efficiency is affected by actual business orders & Large volatility



# Solution

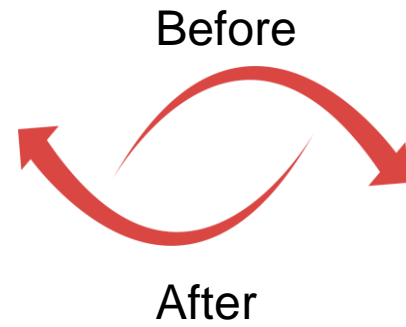


Straight aisle



Mixed Depth Position Storage Strategy

# Solution 2



## Simulation & Evaluation

# New Trend



Pallet Lift

Forklift Type



Unmanned forklift

AGV Type



Underride AGV



Latent AGV

# Video



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02

# Tote Shuttle Robot



# Evolution

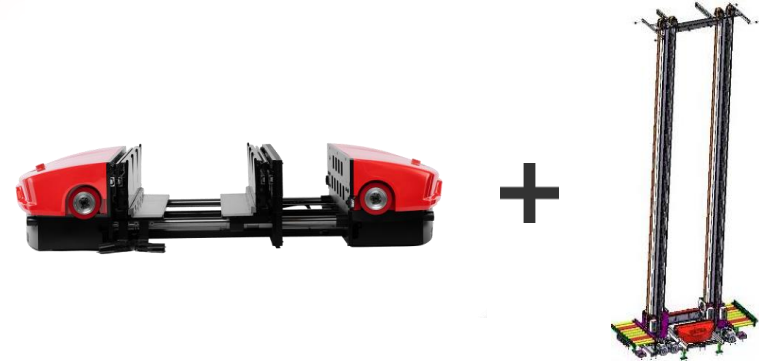
1



1D tote shuttle robot

2003

2



Variable tote shuttle robot + Shuttle lift

2008

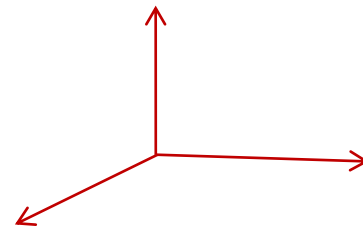
3



2D Tote Shuttle Robot

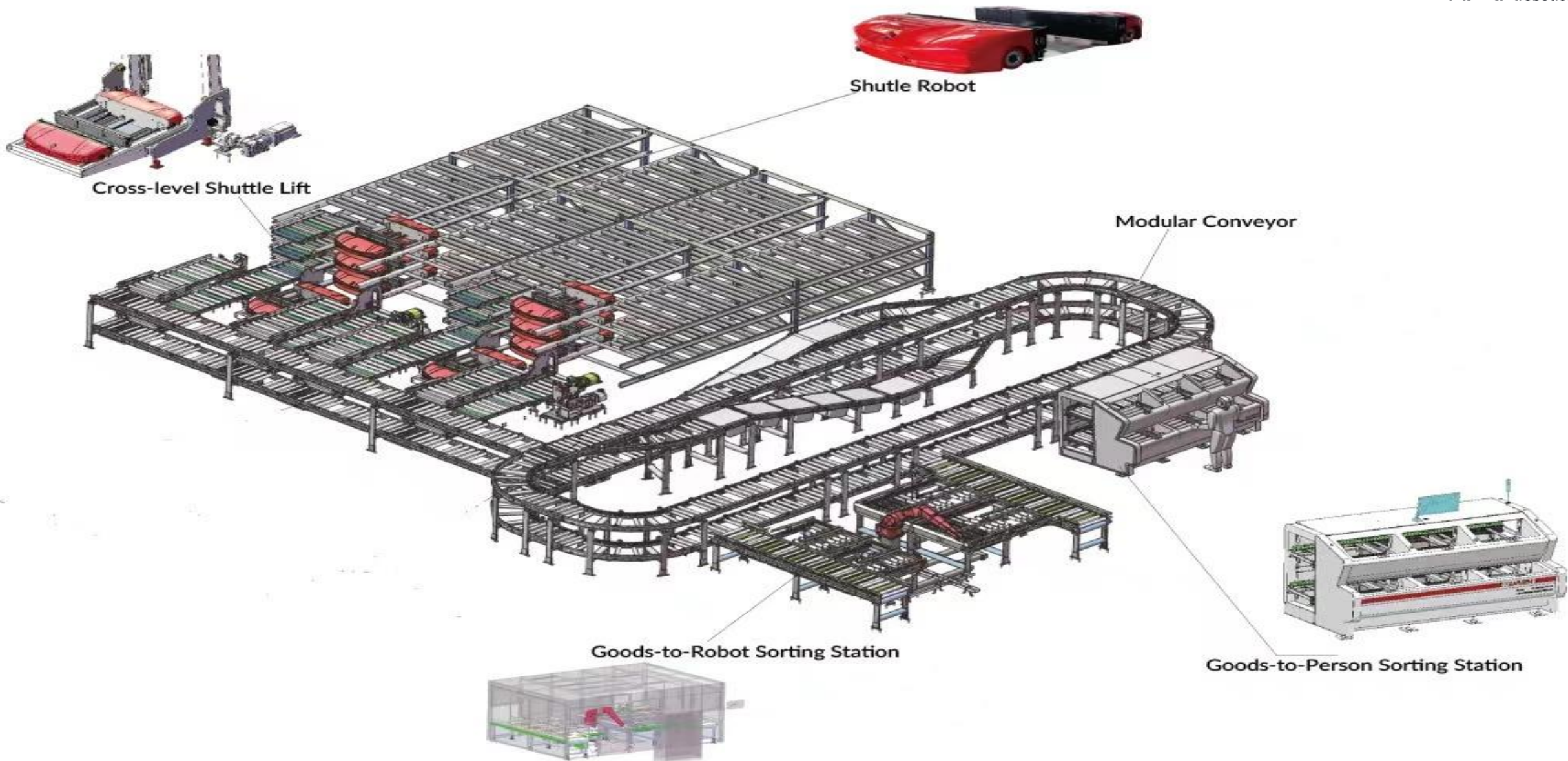
2013

4



3D Tote Shuttle Robot

# Components



# Applications



**Manufacturing**



**Retail**



**Pharmaceutical**



**E-Commerce**



**Automotive**



**Apparel**



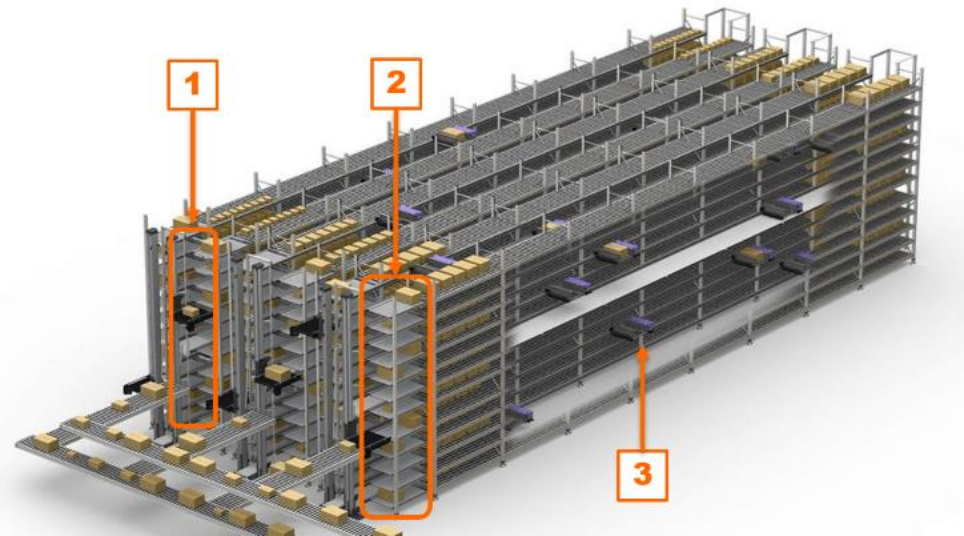
**Book&Publishing**



# Constraints



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High investment cost



Complex Conveyor Layout

# Constraints



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Order coupling  Low sorting efficiency, 300-500times/P/H

# Solution



Equipment  Product

Technology  Plan

New Product Type



# Solution



Combined with AGV equipment



Bag Sorting For Order Decoupling

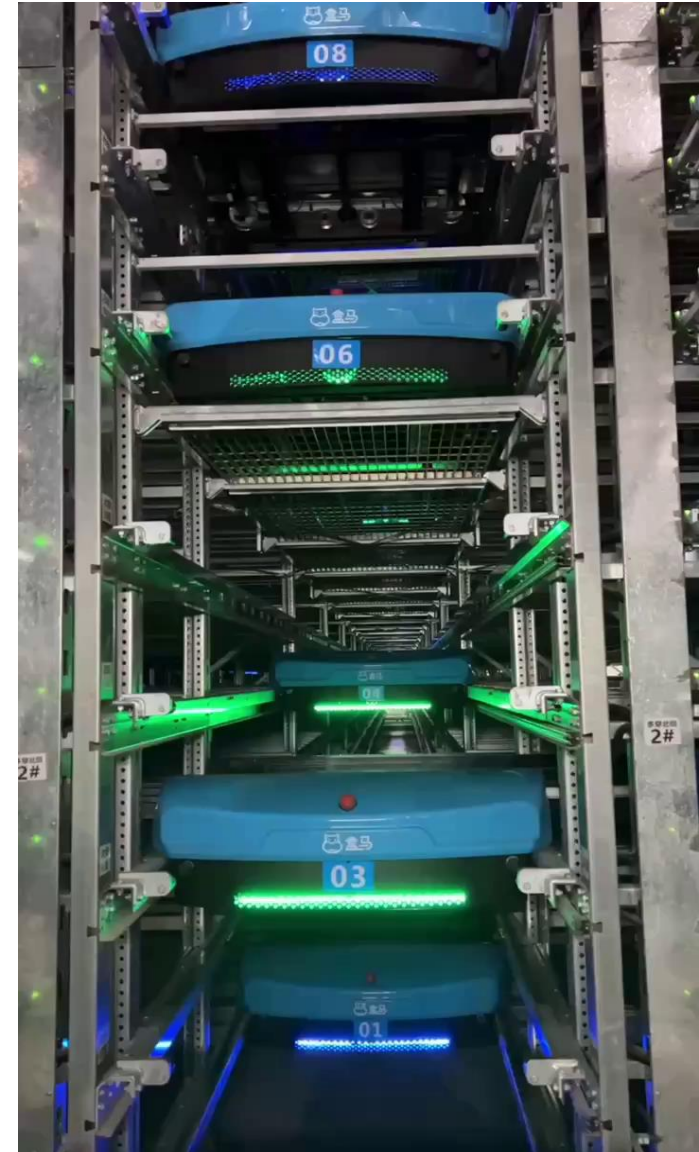
# Case Study-FRESHIPPO



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FRESHIPPO is a new retail platform driven by data and technology, which is a new species that completely restructures offline supermarkets.



# Case Study: SHEIN



HANArobotics



- SHEIN is one of the largest fast B2C apparel e-commerce giant







HANArobotics

03

# All In Shuttle



# All In Shuttle



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Heavy

**1000-1200kg**

**Storage**



Medium

**30-50kg**

**Storage & Buffering**



Light

**5-10kg**

**Convey & Sorting**



Modex 2024 & LogiMAT 2024





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