

The Dream Team Item Picking and AutoStore

Presented by:

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swisslog



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Agenda

- Order Fulfillment Challenges and Trends
- Dense Cube-based Storage and Retrieval
- The Emergence of Robotic Picking
- The Dream Team – ItemPiQ & AutoStore



Challenges and Trends

Carbon footprint



A photograph of several industrial smokestacks with red and white stripes, emitting thick, billowing white smoke against a clear blue sky.

Sustainability

RISING ENERGY COSTS

Urbanization



An aerial photograph of a dense urban skyline at sunset. The sun is low on the horizon, casting a warm orange glow over the city. Tall skyscrapers and a mix of residential and commercial buildings are visible.

Reduced space

INCREASED REAL ESTATE COSTS

High labor costs



A photograph of two workers in a warehouse or industrial setting. They are wearing blue winter jackets and hats. One worker is holding a handheld electronic device, possibly a scanner or inventory tracker, and looking at the screen. The other worker is standing nearby, also looking at the device. The background shows industrial shelving and equipment.

Reduced labor force

LABOR AVAILABILITY & COSTS

Challenges and Trends

Monotonous work



LABOR SHORTAGE

High competition for scarce resources

Ergonomic challenges



WORK ENVIRONMENT

Repetitive tasks

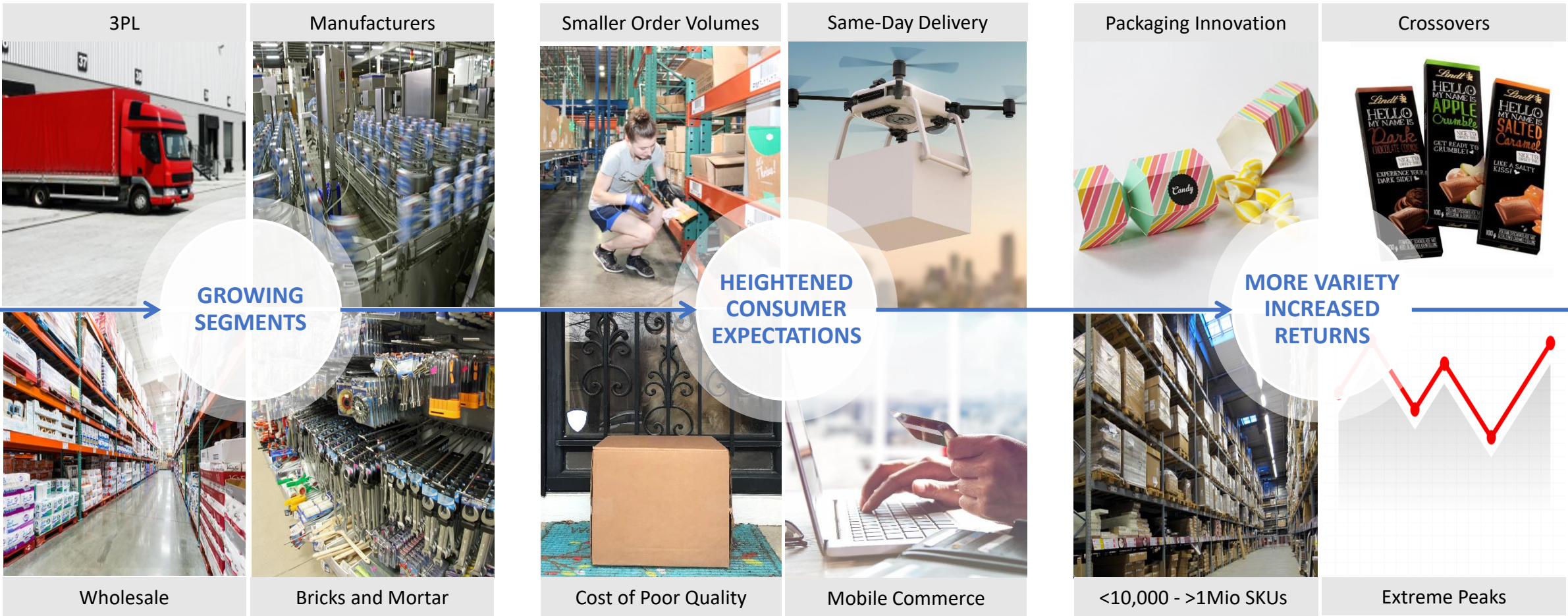
Increased regulations



REGULATORY ENVIRONMENT

Safety concerns

Challenges and Trends



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Space saving storage and picking system

Meeting the most challenging requirements

AutoStore

Do you want to store a large number of SKU's while increasing storage density and remaining very flexible?

AutoStore is a highly efficient robotized storage and order processing solution that integrates easily into both new and existing buildings.

1. Density

60% reduction of space

2. Scalability

Scale whatever you need

3. Flexibility

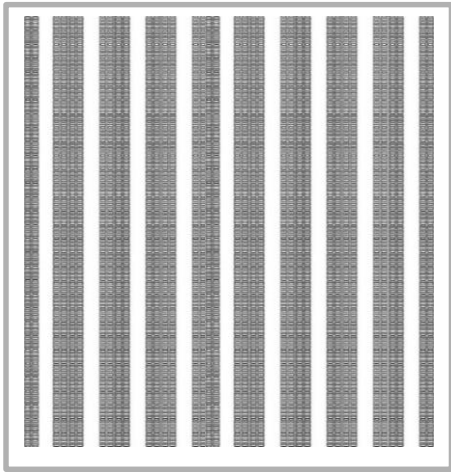
Build around obstacles

4. Energy efficiency

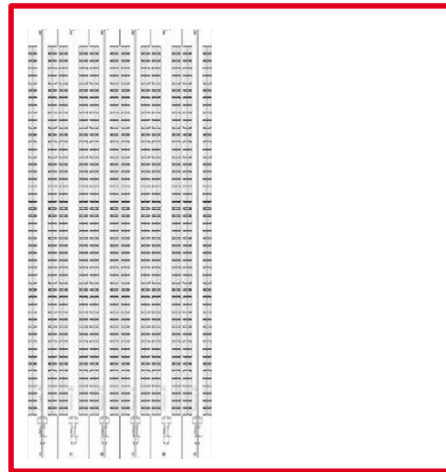
10 robots = 1 toaster

Store four times more! Reduced space utilization

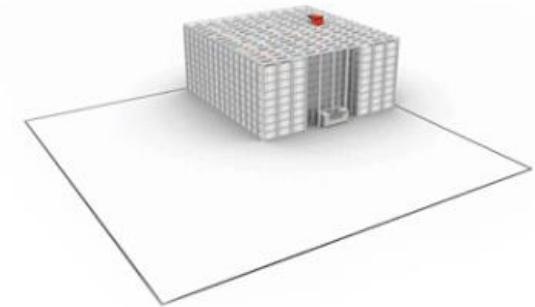
Manual storage



AS/RS (traditional)



AutoStore



40-60% reduction of space

Grow and expand your warehouse at any time By simply adding robots, workstations and grid

**Need to improve
performance?**

Add more robots



Need to improve capacity?

Add more grid



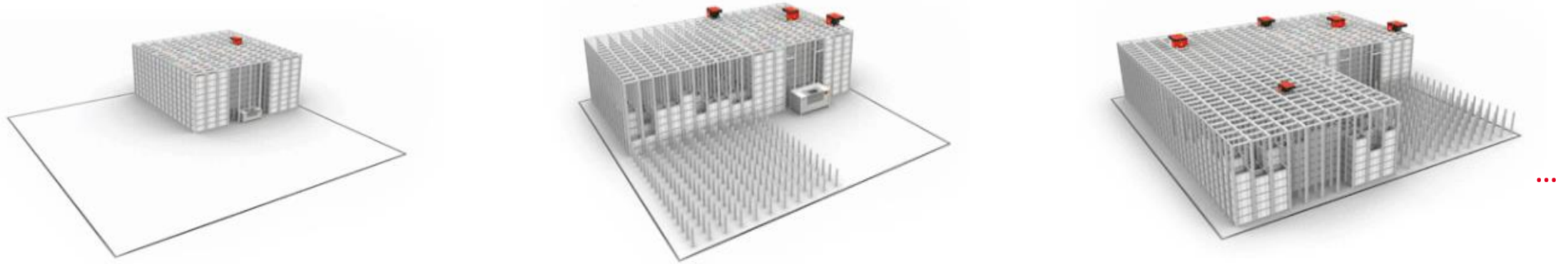
Need more picks?

Add more ports



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Grow and expand your warehouse at any time
By simply adding robots, workstations and grid

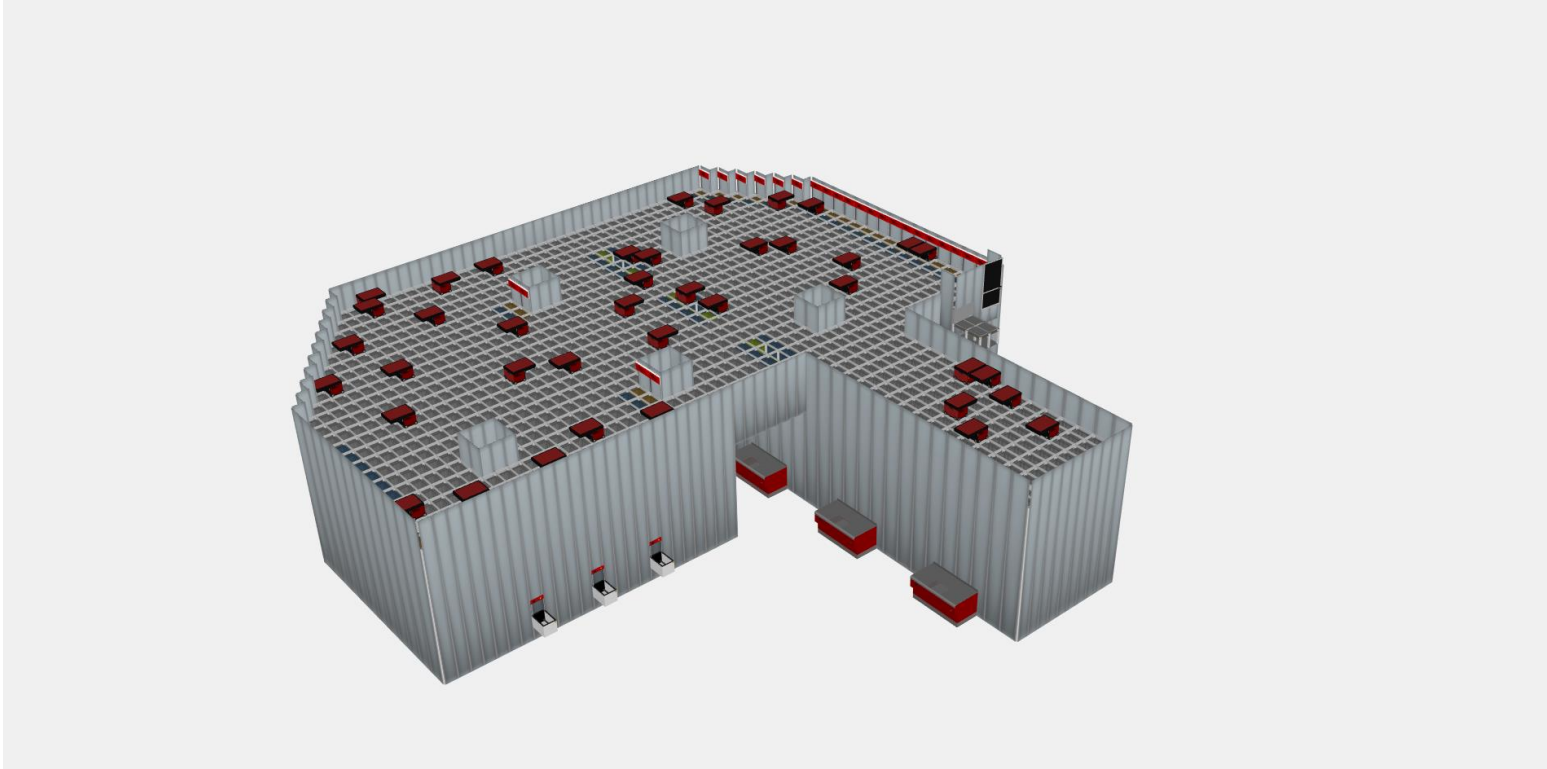


Expand the system during full operation!

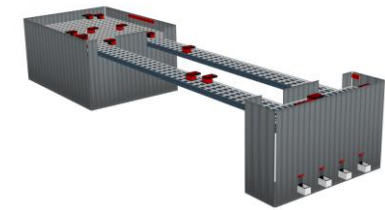
POWERED BY POSSIBILITIES.

Build AutoStore Around Every Obstacle

Easy to retrofit into existing warehouses/buildings

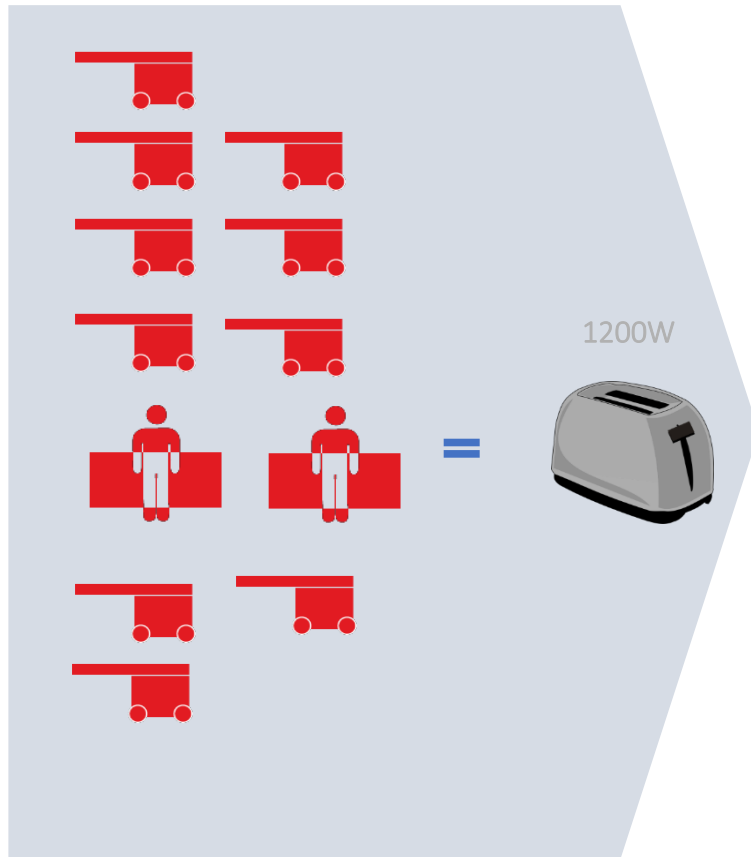


- Build grid around pillars and other static obstacles
- Adapting to any building shape
- Flexible port locations (picking & receiving)
- Applicable in low ceiling buildings
- All bins can be delivered to all ports
- Pick and replenish simultaneously
- Easy to relocate system if needed



Energy Efficient System

Realize significant energy cost savings



1 week operation at 8 hours

- Battery powered robots: 10 robots consume as much energy as a toaster
- Save on energy costs – no need for warehouse lighting

Standard Software Functionality

Warehouse processes included



INBOUND

ASN receiving
Blind receiving
Put to light



STORAGE

Cycle Counting
Supervisor Approval
TU Maintenance
Inventory Control
Bin Forecasting; Bin
Preparation; Bin Sub-
dividing
Bin Maintenance



ORDER PLANING

Reservation
Allocation Releasing
Grouping
Order Groups /
Waves
Dock Assignment
Sealing Shipping



ORDER PICKING

Voice picking
Cluster picking
Single order picking



CONSOLIDATION



SHIPPING

Sealing shipping

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Key advantages of ItemPiQ

Fast and reliable picking system



ItemPiQ

Do you want to reduce operational cost, retain flexibility and increase efficiency in your warehouse?

Our intelligent automated item picking application, ItemPiQ, enables all these aspects and more for your warehouse.

1. Fast order fulfillment

Up to 1,000 picks per hour

2. Variety of products

Multi-functional gripper

3. No teaching process

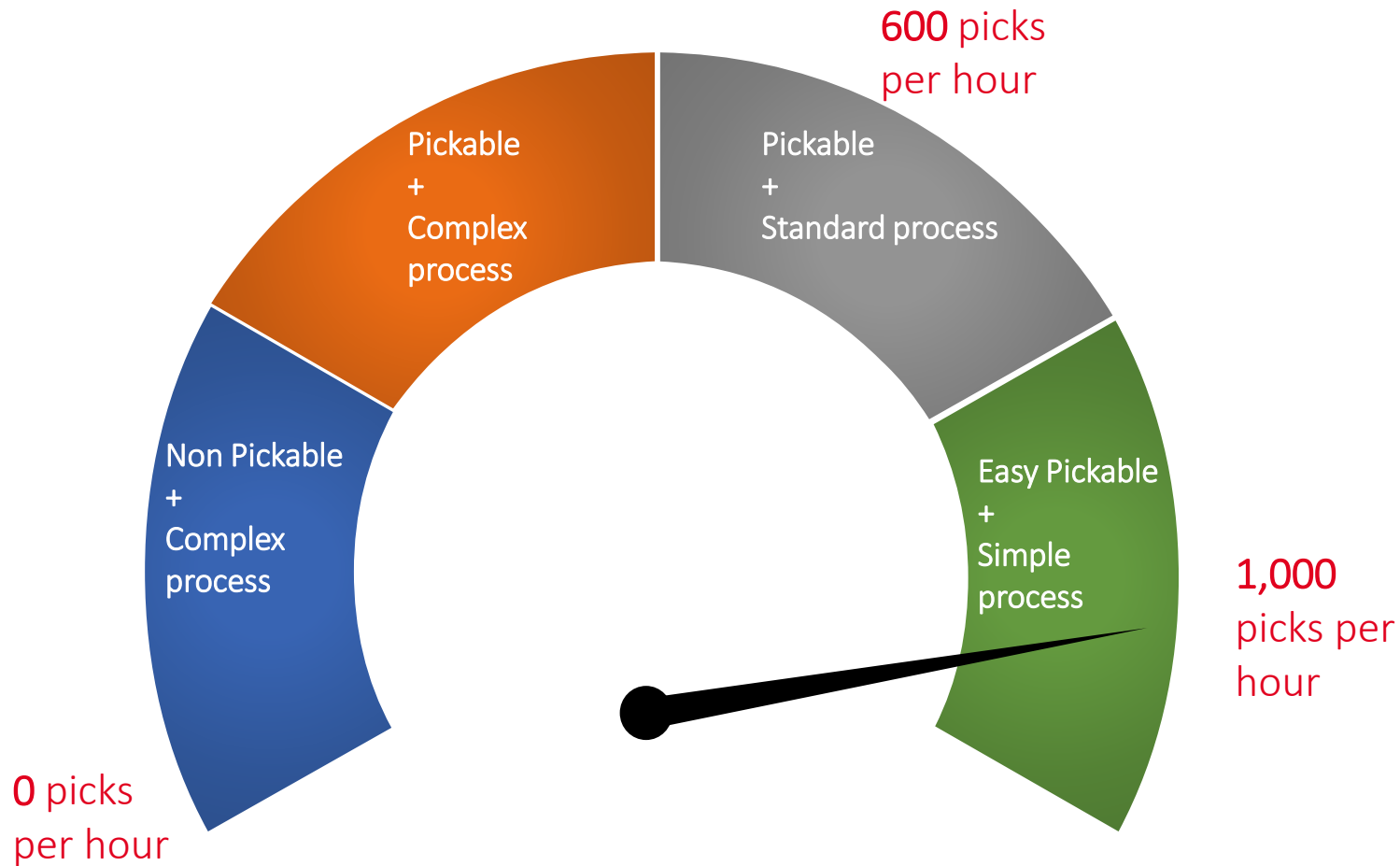
Picking unknown products

4. Reliability

Certified industrial components

High performance

Rapid order fulfillment



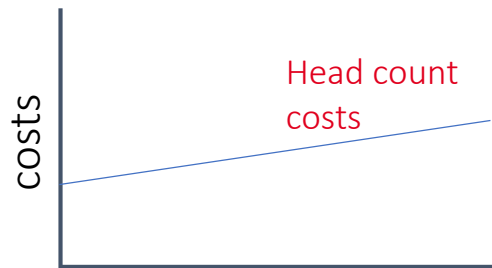
- Robot can work 24/7 with a performance of up to 1,000 picks per hour
- Supports humans in simple, repetitive and in ergonomic picking tasks
- Optimized processes: robot picks and human focuses on more complex handling/work tasks
- Lower cost per pick in comparison to manual picking and return on investment within three years (> 1 shift operation)

Picks & places a wide range of SKUs



Why Automation?

Return on Investment Calculation



Time



Manual

vs.



Time

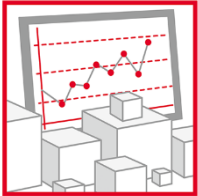


Automated

Assumption

- \$44k head count costs
- 2 Shifts
- Total \$88k per year
- Objective: 2-3 years ROI

Advantages of robotic item picking



24/7 Operations

Manual vs.
automated



Cost efficiency

Annual Labor Costs
Manual labor avg = \$44K/yr



Quality of picking

Lower failure rate than manual
picking. Saves expensive returns.

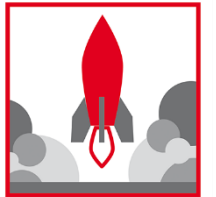
Flexibility

No time restriction/work force regulations
(working hours, warehouse condition, etc.)



Easy-to-use

Plug & play
functionality



Advantages of ItemPiQ

Use of unique gripper, seamless WMS integration and self-learning



Can pick a wide range of products

The unique gripper with 4 different grasping methods can pick products in different shapes and sizes of up to 1.5 kg.



Self-learning to increase picking performance

Smart software allows continuous learning to enhance picking strategies of unknown products. No CAD or 360° Pictures of products needed.



Seamless Software integration

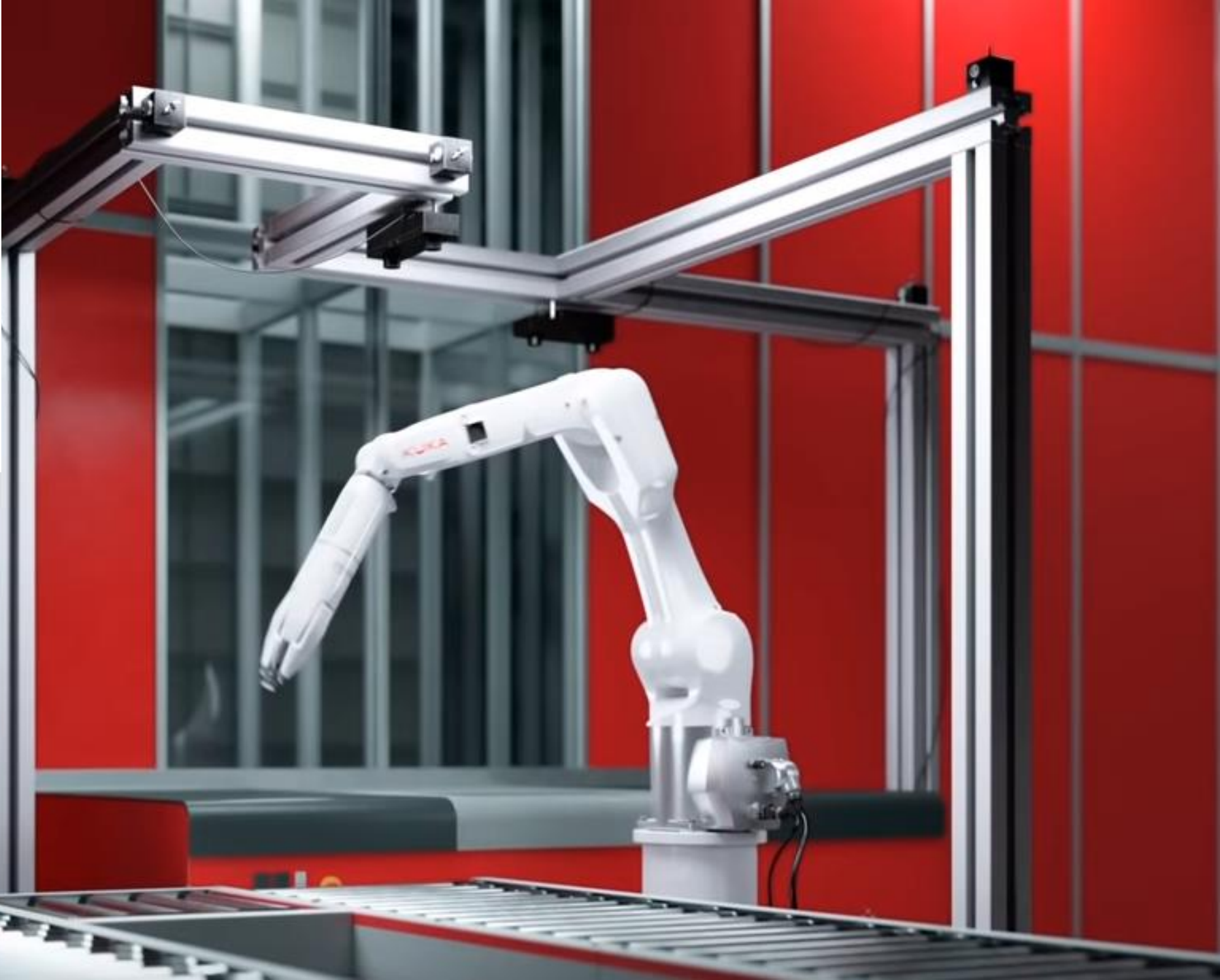
Interface to WMS as performance accelerator.
Standard interface to connect to any WMS system.



Easy-to-use

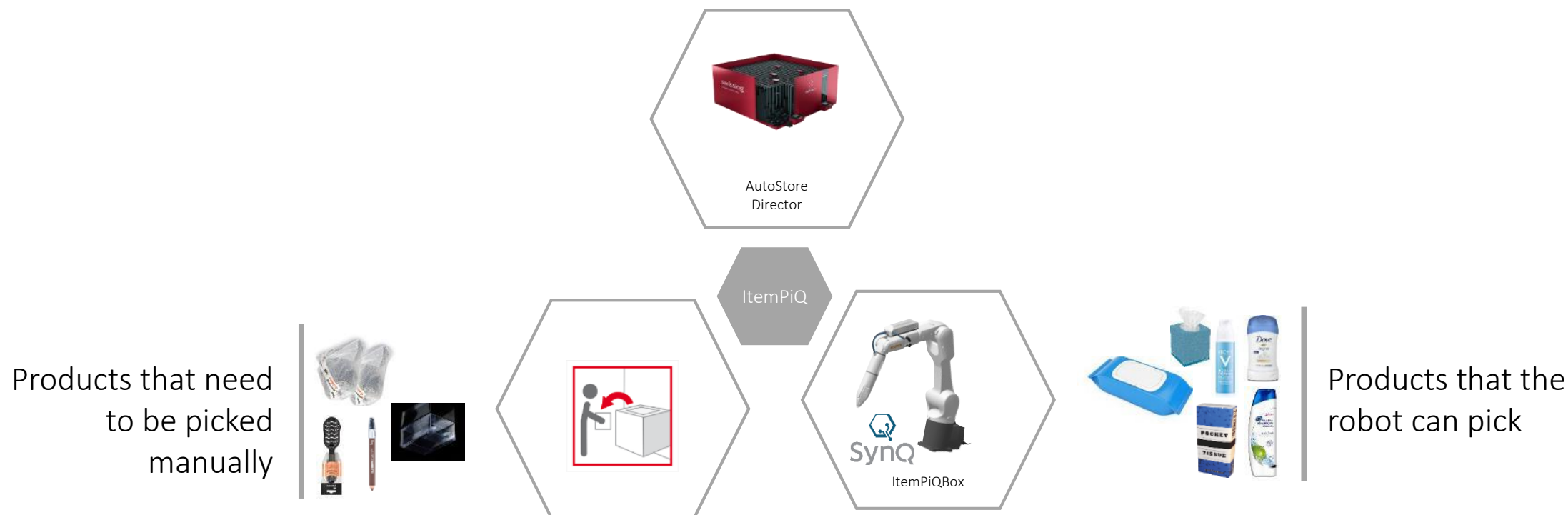
Intuitive user interface ensures fast ramp-up and smooth operations.
No robotics know-how needed!

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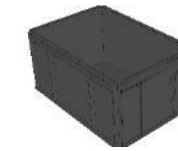
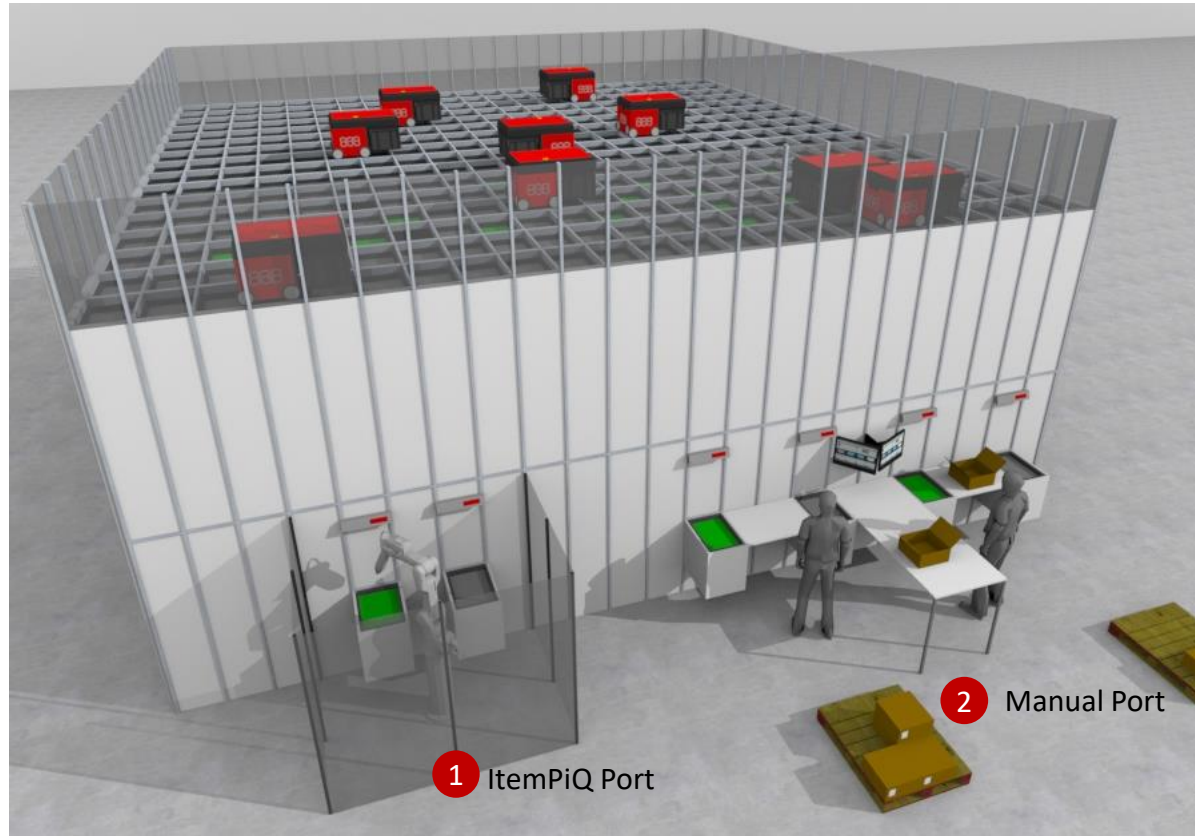
ItemPiQ

Makes sure the right products are assigned to the robot

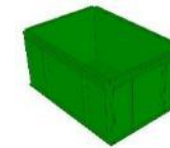


ItemPiQ & AutoStore

Example Solution – Process Description



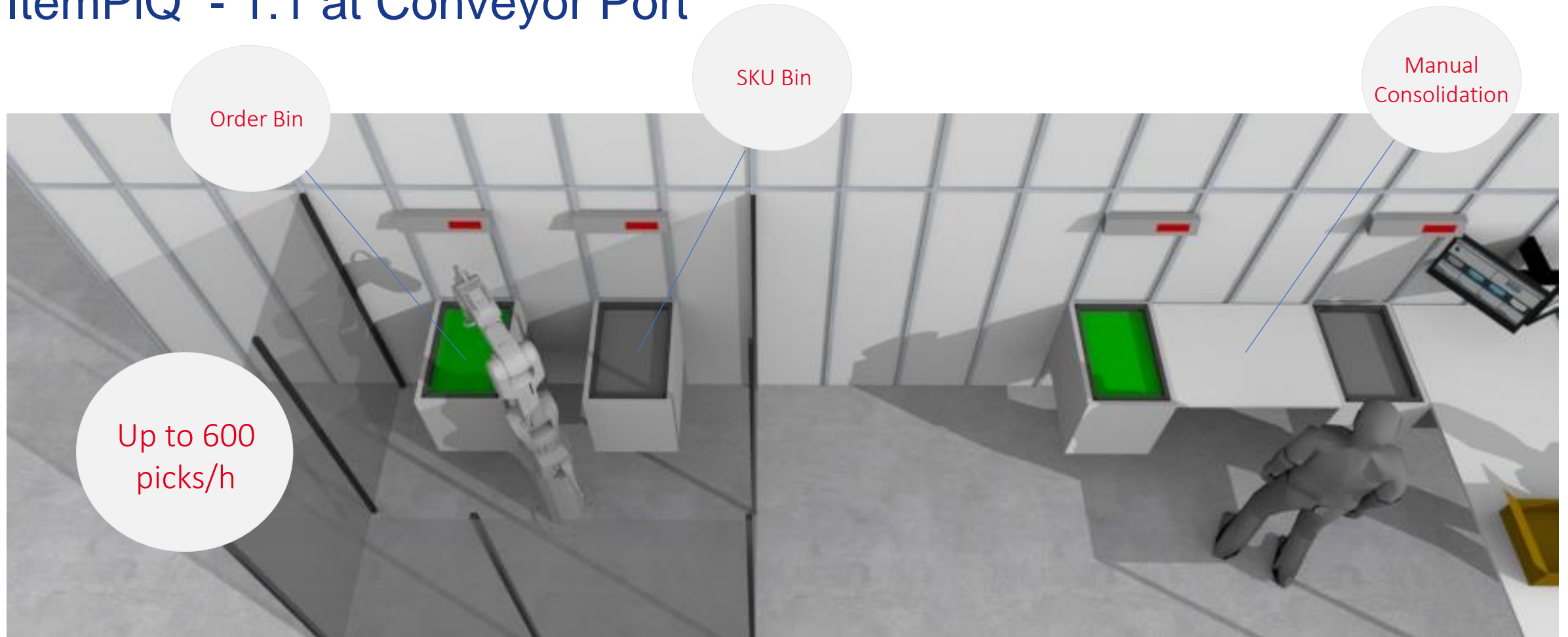
Grey Bin = Storage Bin



Green Bin = Order Bin

1. Green Bin (Order Bin) is sent to the ItemPiQ Robot Station
2. Robot is picking orderlines from Grey Bin
3. Green Bin is sent back to AS for temporary storage
4. Green Bin is brought out for Consolidation/Packing

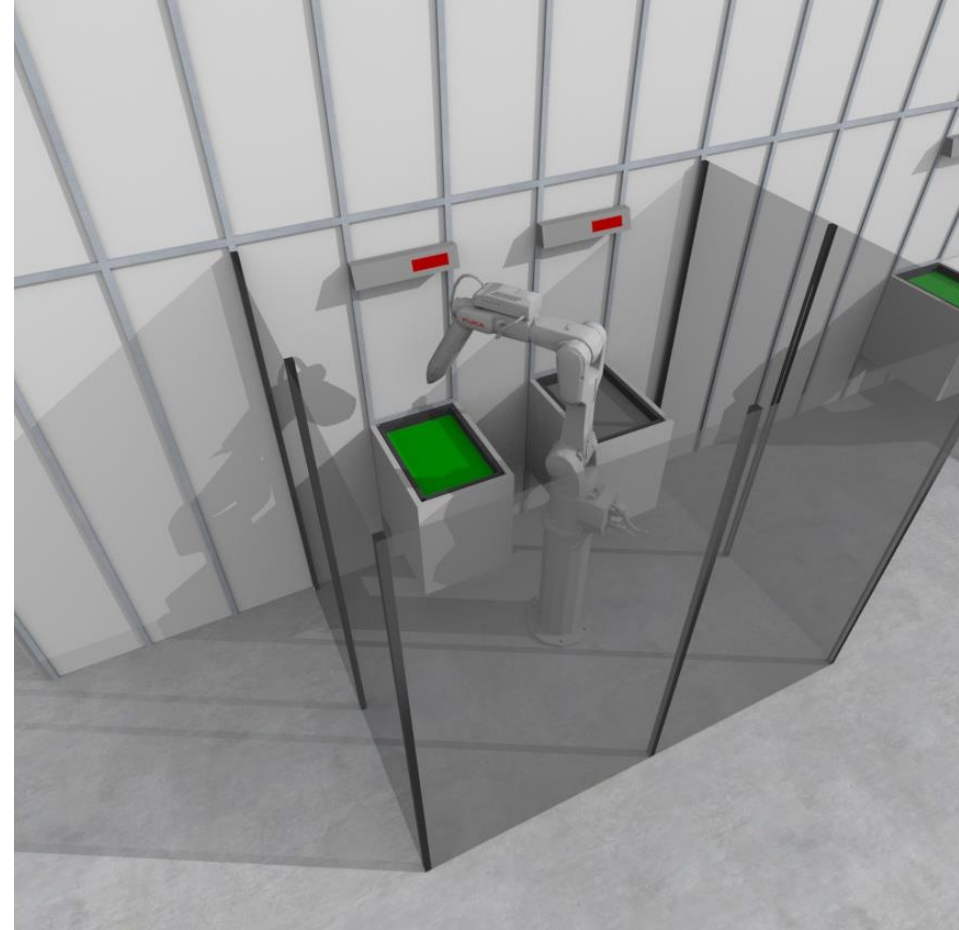
ItemPiQ - 1:1 at Conveyor Port



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Error Handling

- Robot will detect loss of item and re-pick
- Pick success rate is measured in WMS Software



Use Cases : Pick to Transit Bin or Direct to Shipping Carton

■ Pick to Store Tote

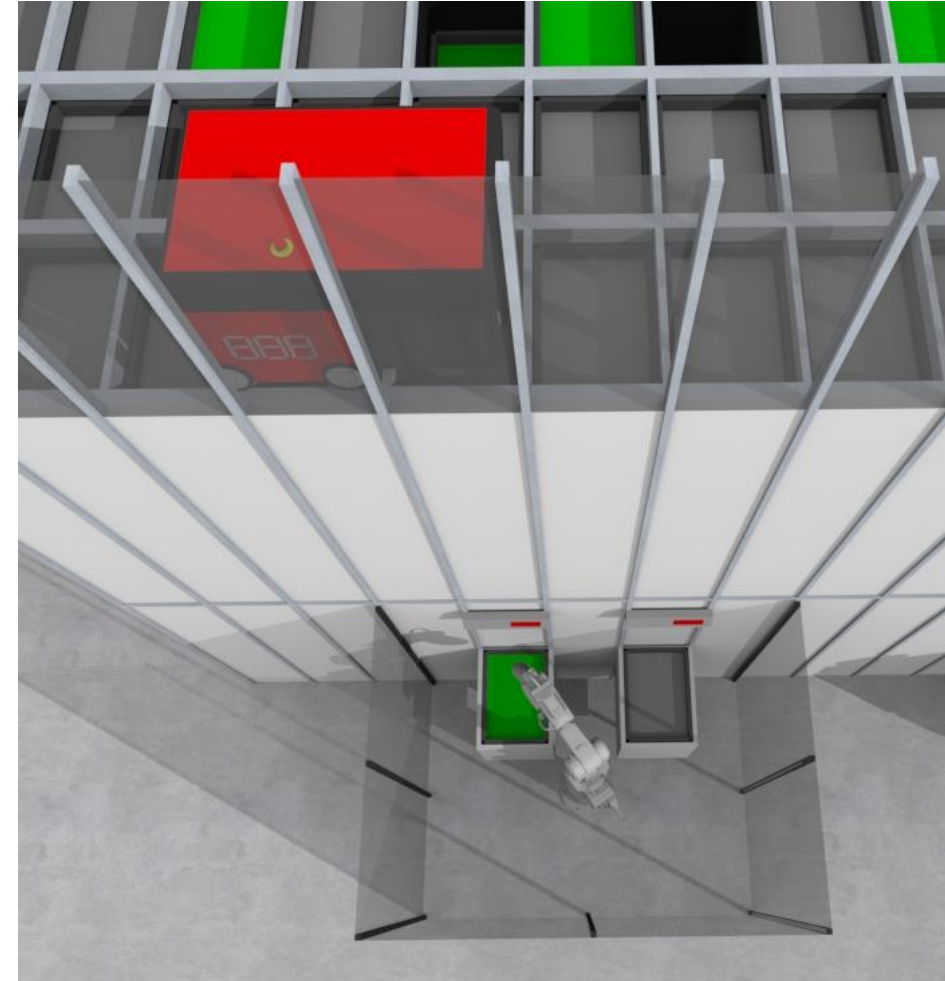
- ItemPiQ to AutoStore Bin
- Send Bin to Workstation for manual Consolidation and packing into Store tote.
- *Increased Pick Performance at Manual Stations*

■ Pick to Transit Tote for Packing

- ItemPiQ to AutoStore Bin
- Send Bin to Pack Benches for packing Process

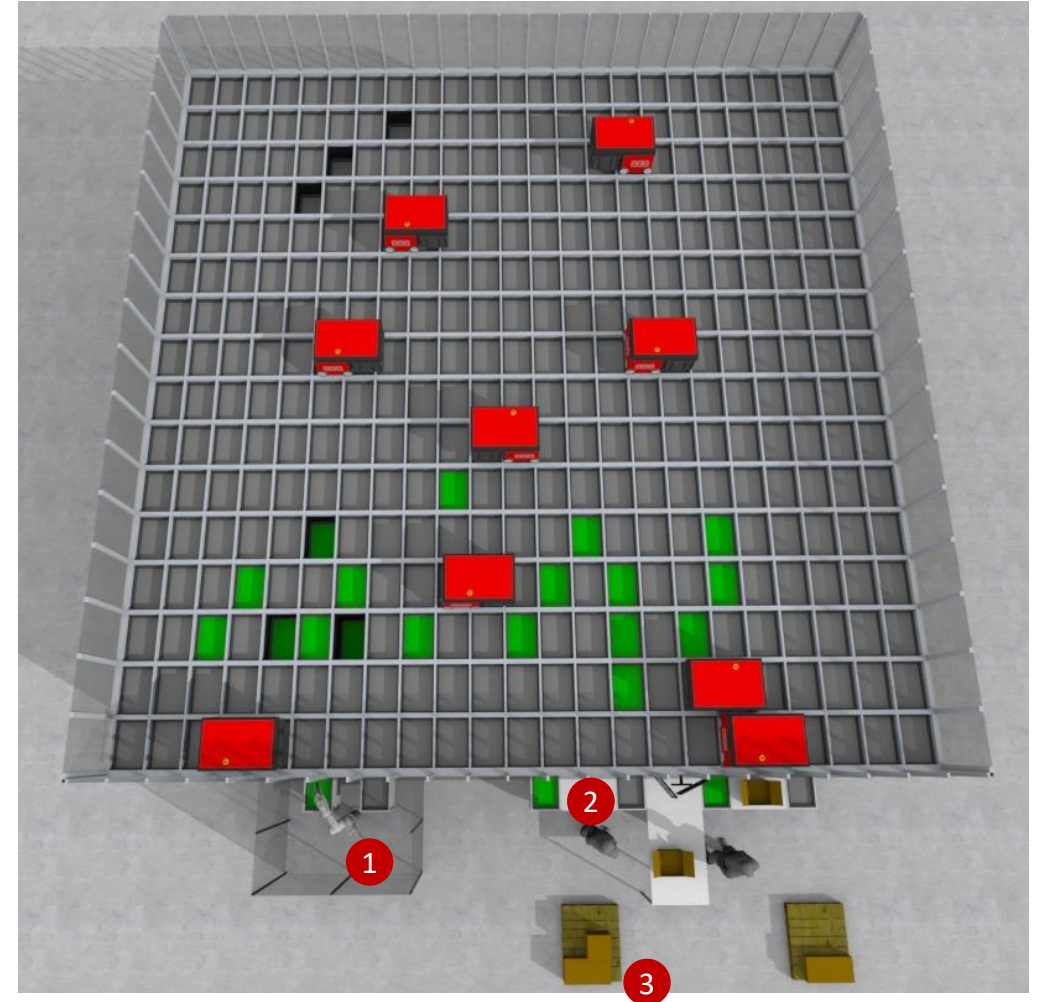
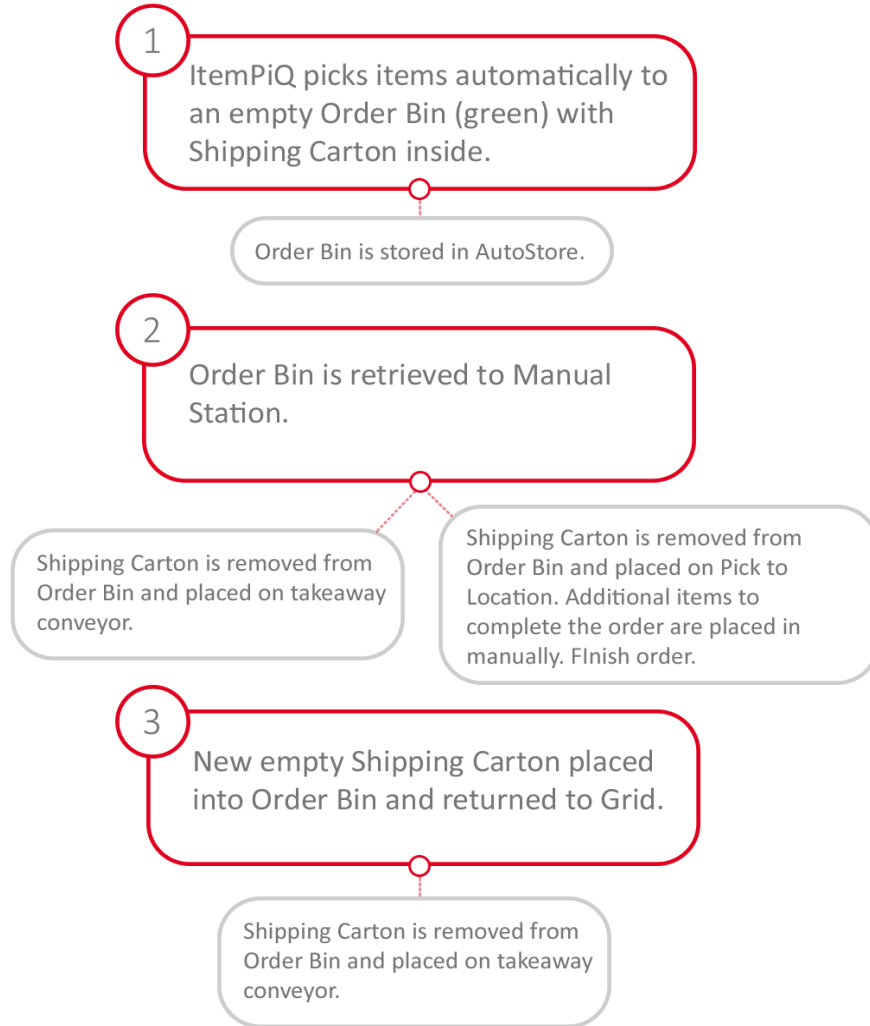
■ Pick to Shipping Carton

- Place empty Shipping Carton into Bin
- ItemPiQ to AutoStore Bin
- Manually remove Carton to finish process



Order Types - Direct to Shipping Carton

Process flow

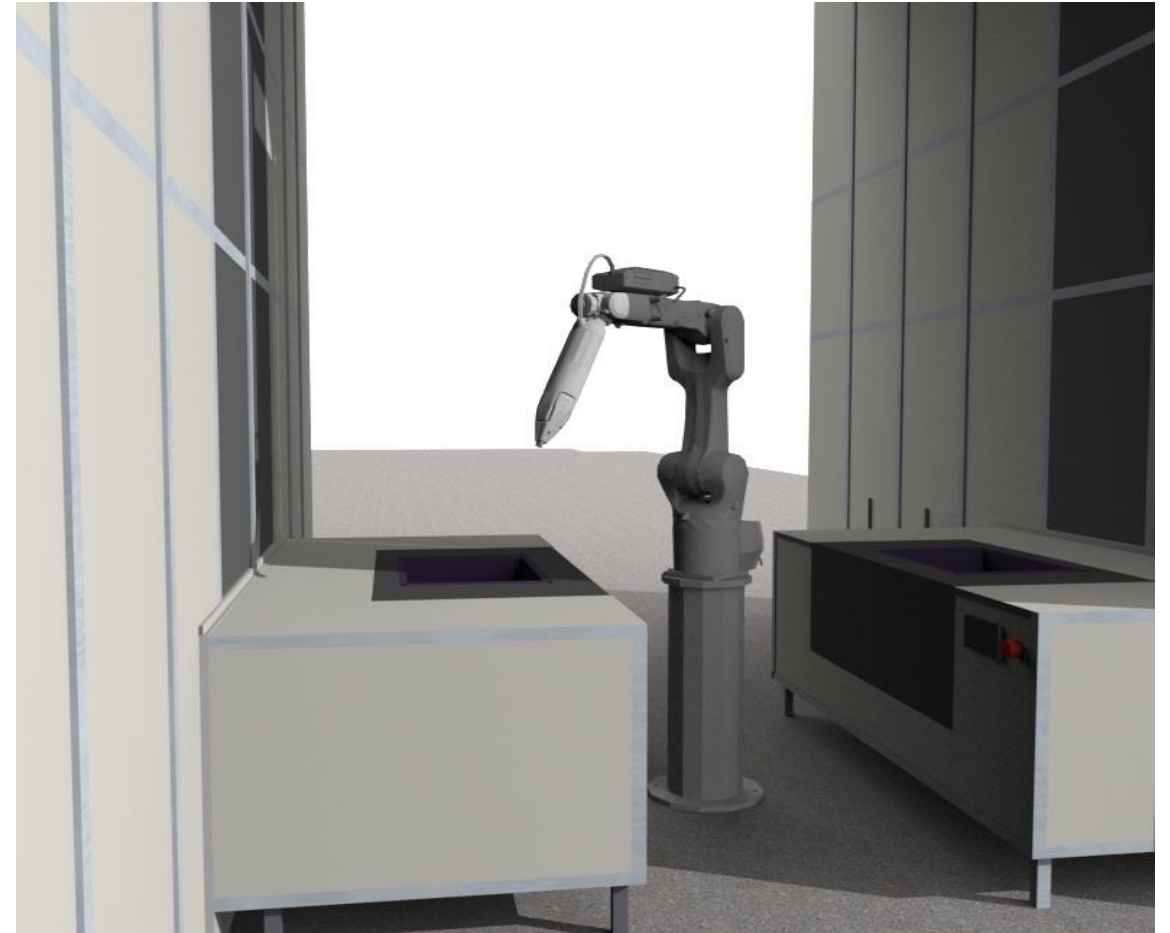


(1) Design for 1 Carton size approx 600x400. Could in future be multiple Shipping cartons of smaller sizes

ItemPiQ

Example Solution in Development - 1:1 Carousel Port to Carousel Port

- Conveyor Port is limited to ~200 bin presentations per hour so will limit ItemPiQ performance.
- Similar process could be achieved at a carousel port to increase ItemPiQ performance (~350-400 bin presentations per hour).
- Configuration is back-to-back carousel ports in a tunnel.





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For more information:

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Or visit MODEX Booth #7657

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