

# Modern Design Trends for Direct to Consumer Fulfillment

Sponsored  
by:



Presented  
by:

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Director, Order  
Fulfillment Projects



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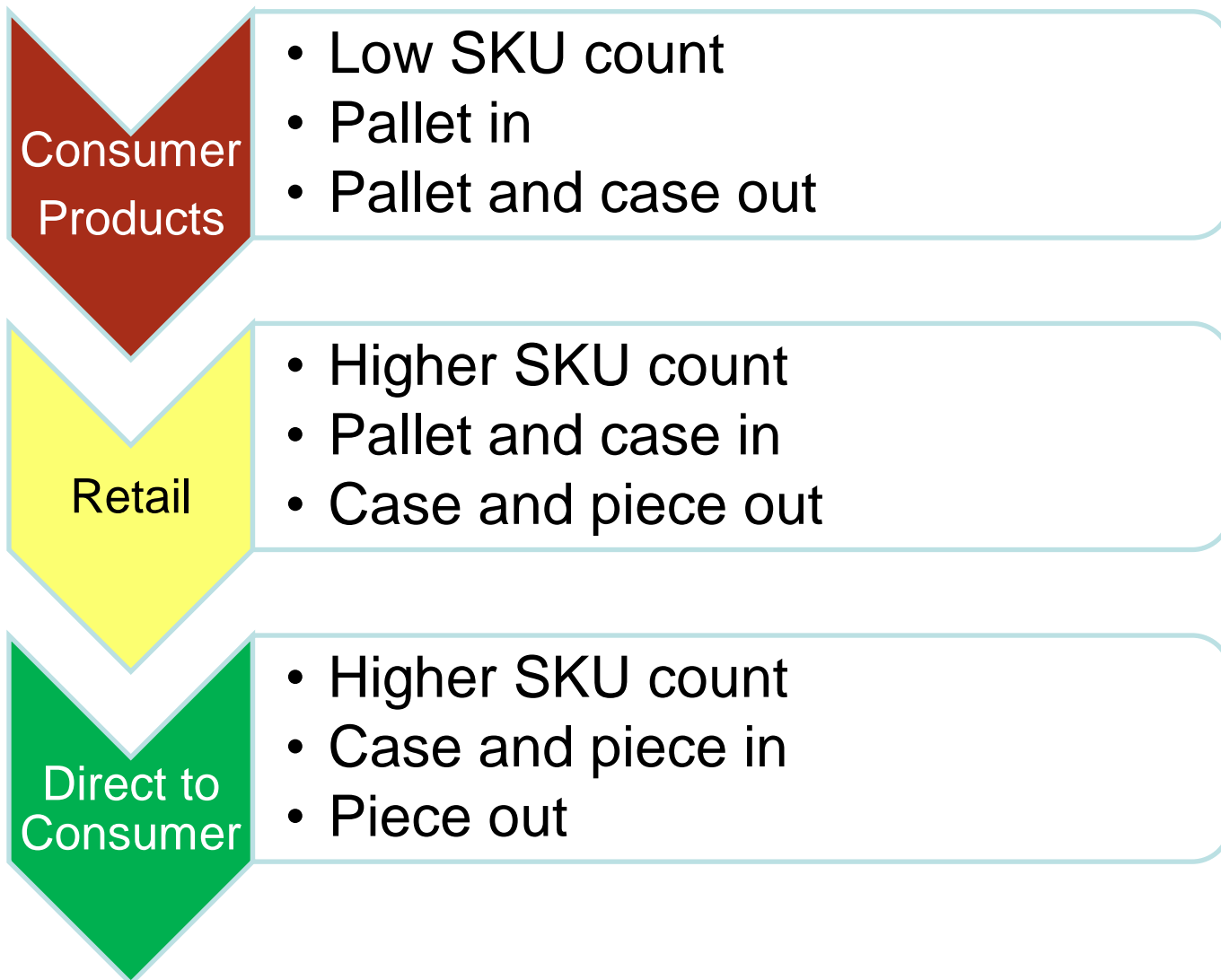


# Topics

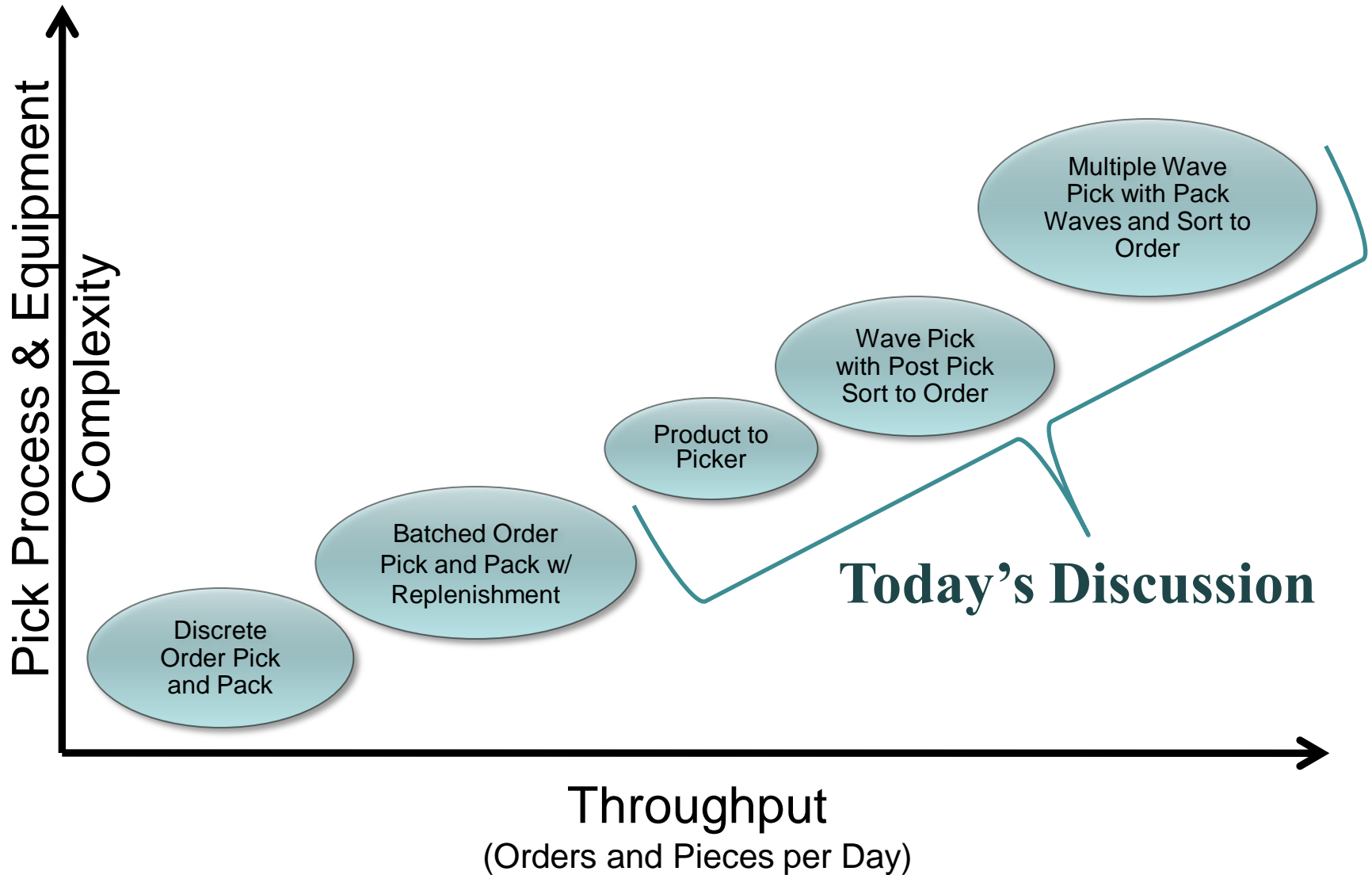
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1. Direct to Consumer (D2C) Fulfillment Center (FC) characteristics.
2. D2C Order Fulfillment Progression
3. Define the Product and the Operation
  - Design Considerations for D2C FC Design
4. Material Handling Equipment Selection
5. Systems Support: Equipment Control and WMS
6. Case Studies

# Distribution and Fulfillment



# D2C Order Fulfillment Progression



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# DEFINE THE OPERATION

**Operations  
Database  
Model**

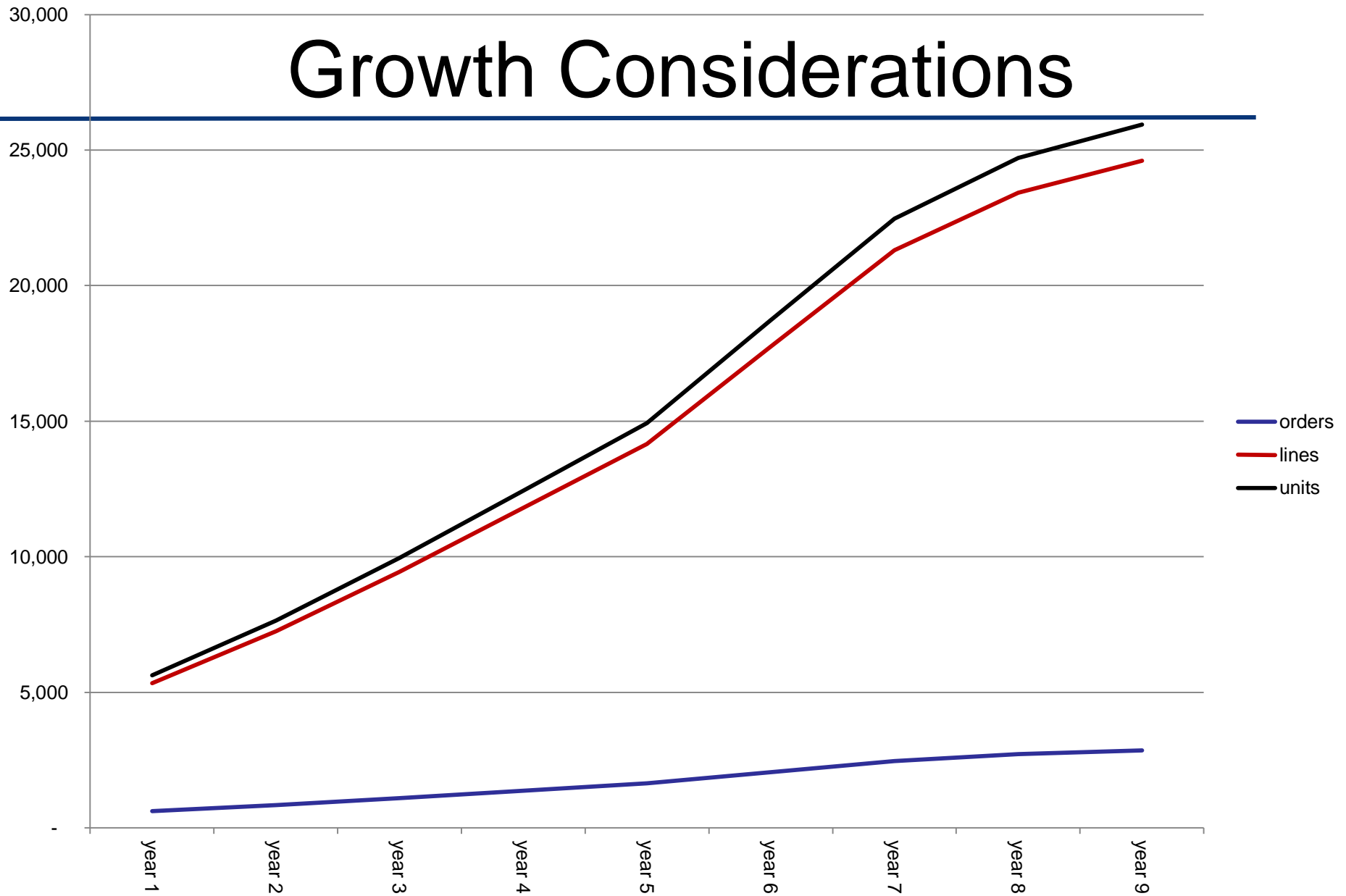
**Product Master  
File**

**Inbound Receipt  
history**

**Outbound  
Shipping history**

**Inventory  
snapshot history**

# Growth Considerations



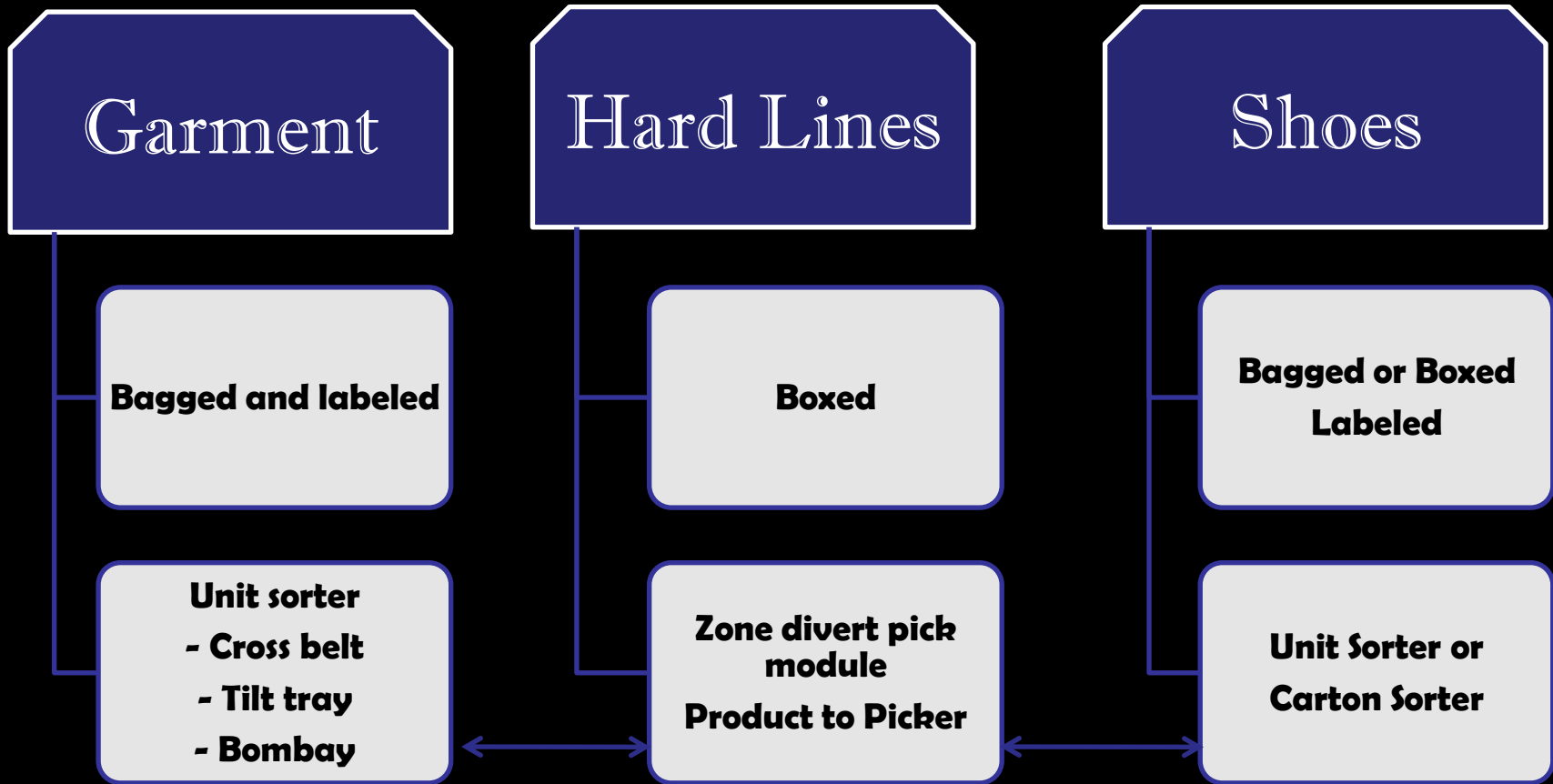
# Reserve Storage



- Case or pallet storage?
- Narrow / very narrow aisle?
- Forward pick or pick from reserve?
  - SKU additions or obsolescence?



# Product and Packaging Considerations

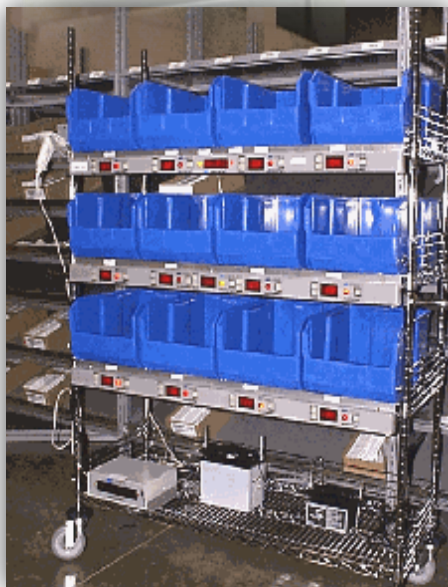


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Match the equipment to the need

# **MATERIAL HANDLING EQUIPMENT SELECTION**

# Pick Cart



# Product to Picker



Mini-load



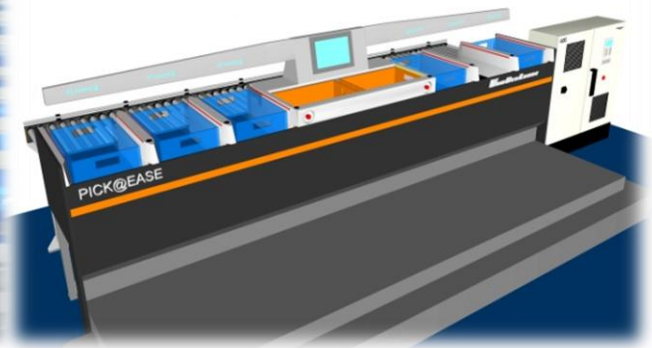
Vertical Lift Module



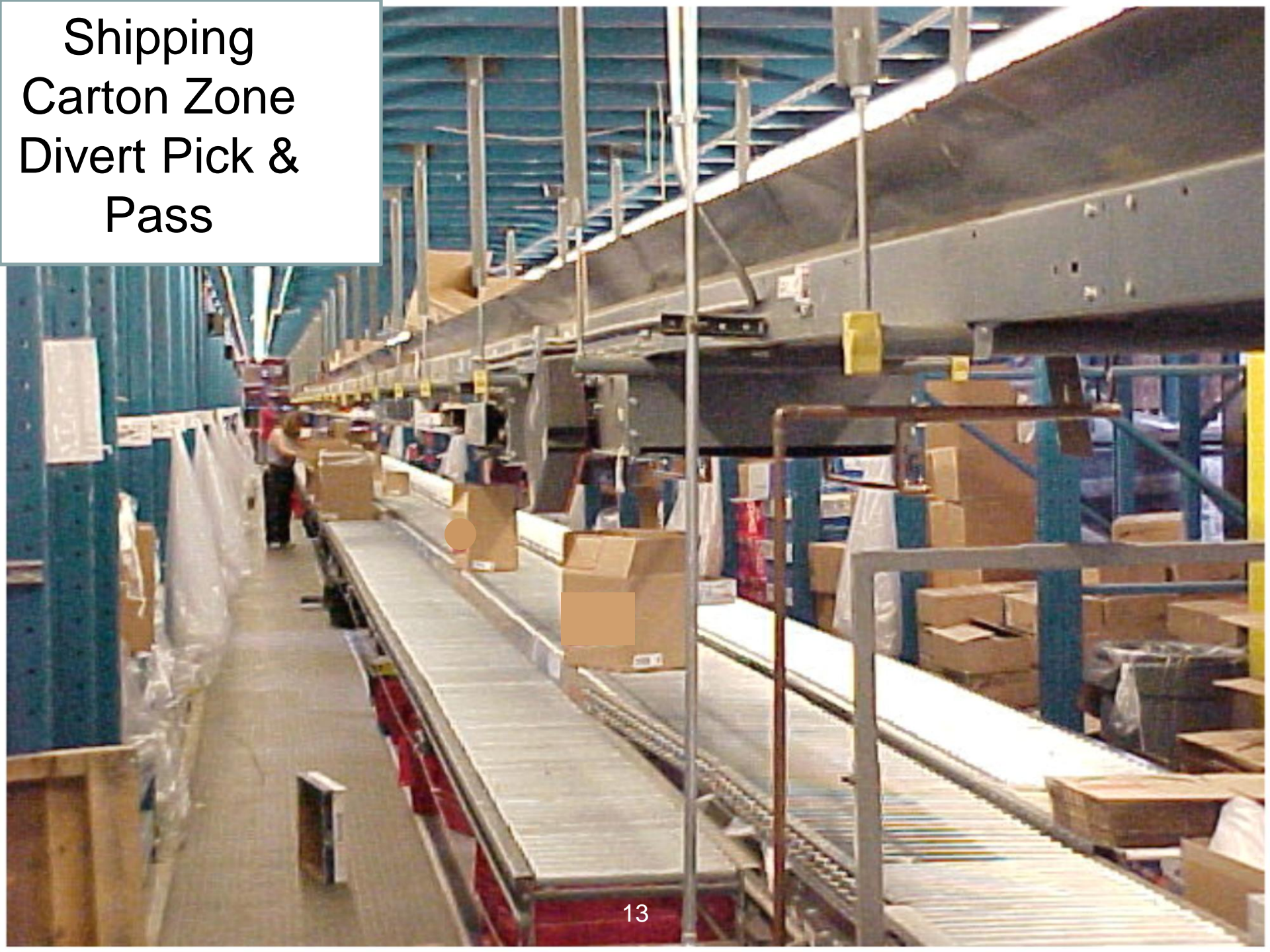
Shuttle System



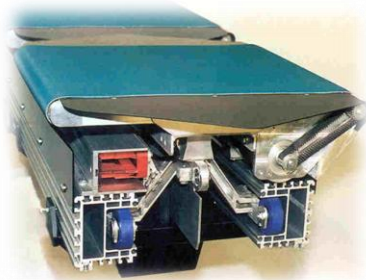
Carousel



# Shipping Carton Zone Divert Pick & Pass



# Unit Sort Order Consolidation



Bombay



Cross  
belt



Tilt tray





# Unit Sorter Induction – Semi Automatic





# Sort to Order

1 sort vs. 2-pass sort



automated



manual

# Pick to Pack Product Transport – Tote



Pick to Pack  
Product  
Transport –  
Bulk  
Conveyor



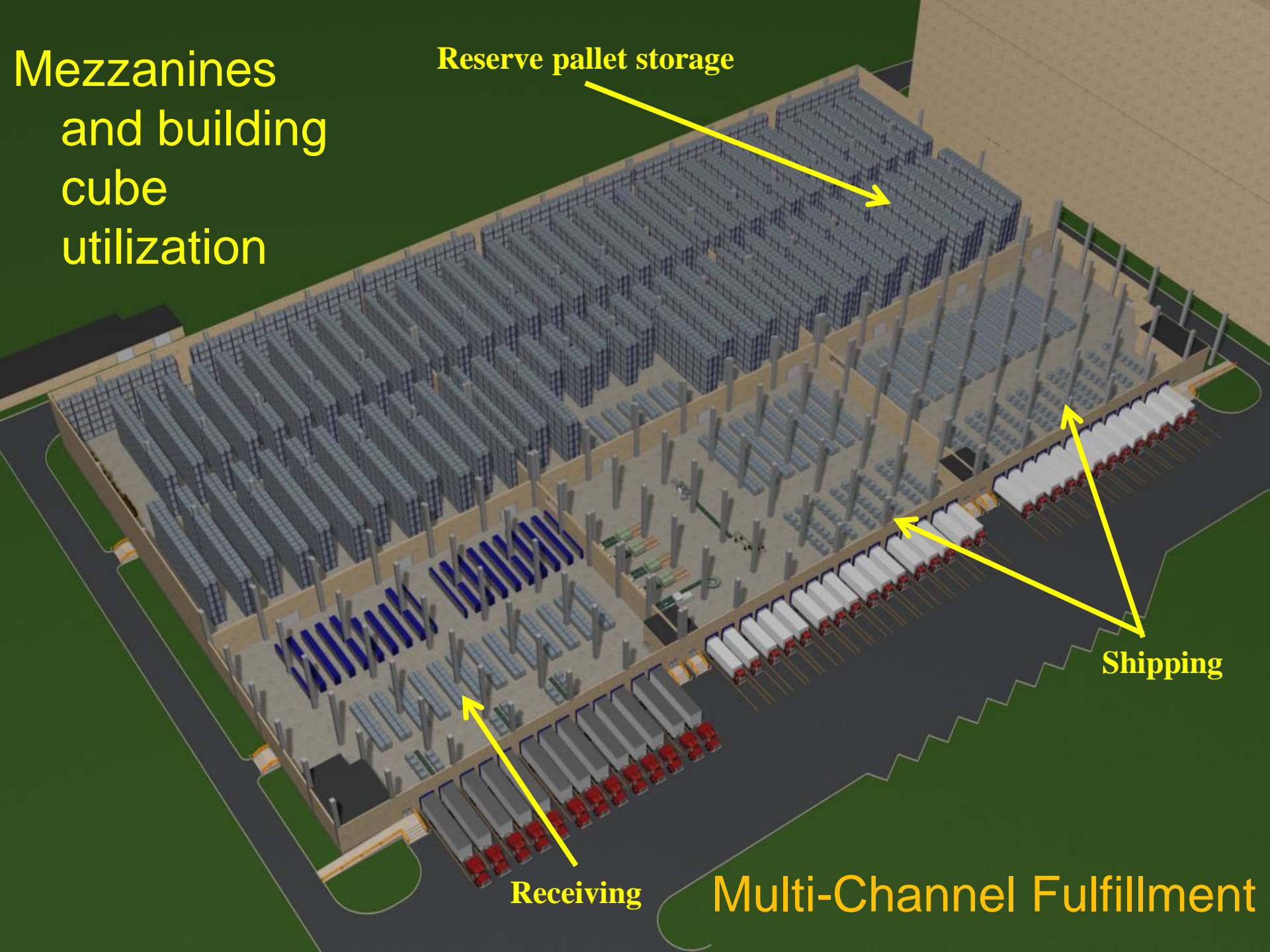
Mezzanines  
and building  
cube  
utilization

Reserve pallet storage

Shipping

Receiving

Multi-Channel Fulfillment

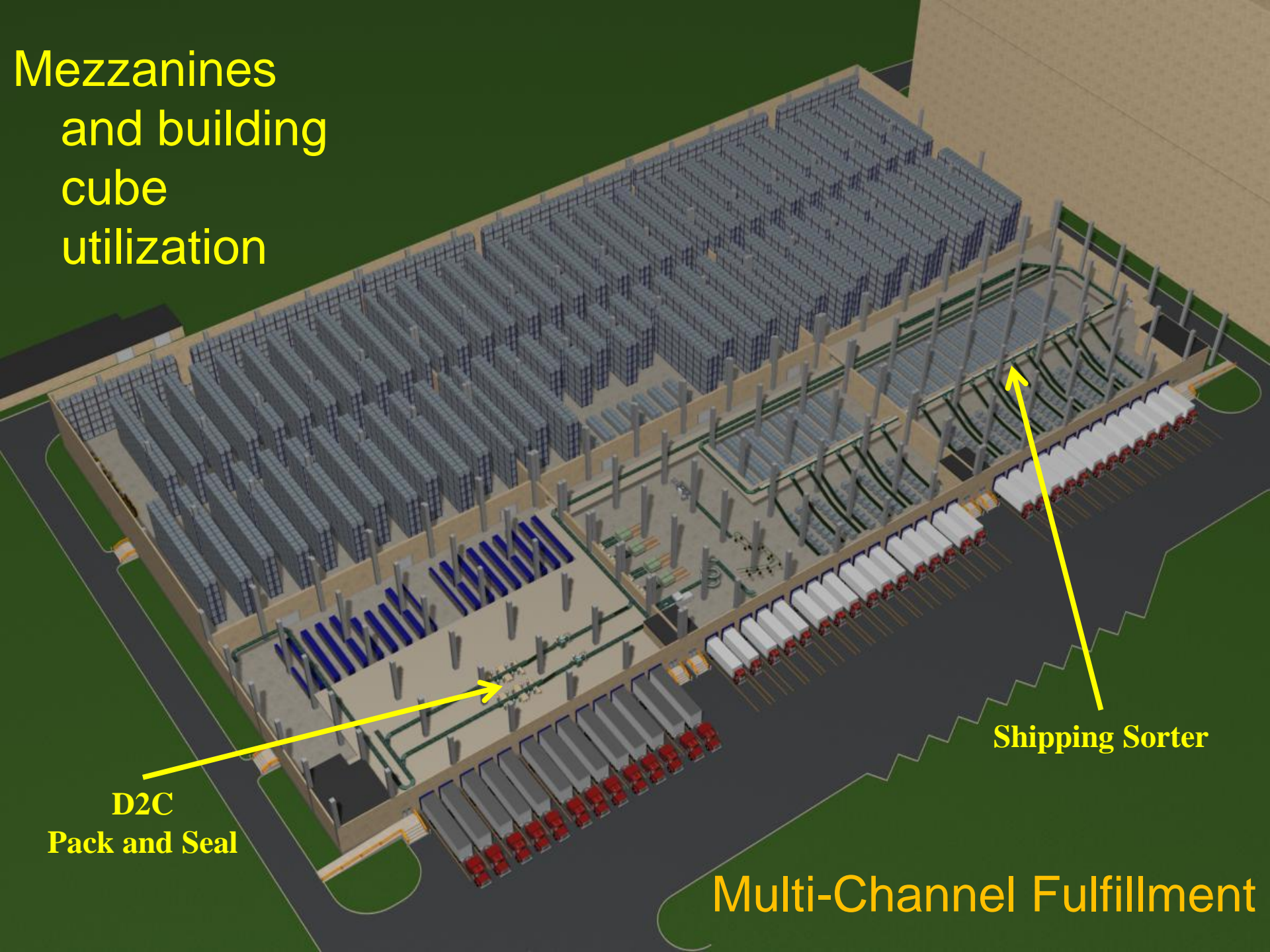


Mezzanines  
and building  
cube  
utilization

D2C  
Pack and Seal

Shipping Sorter

Multi-Channel Fulfillment



**Mezzanines  
and building  
cube  
utilization**

**Pallet Lift (elevator)**

1 of 3

**Mezzanine  
Pallet pivot gate**

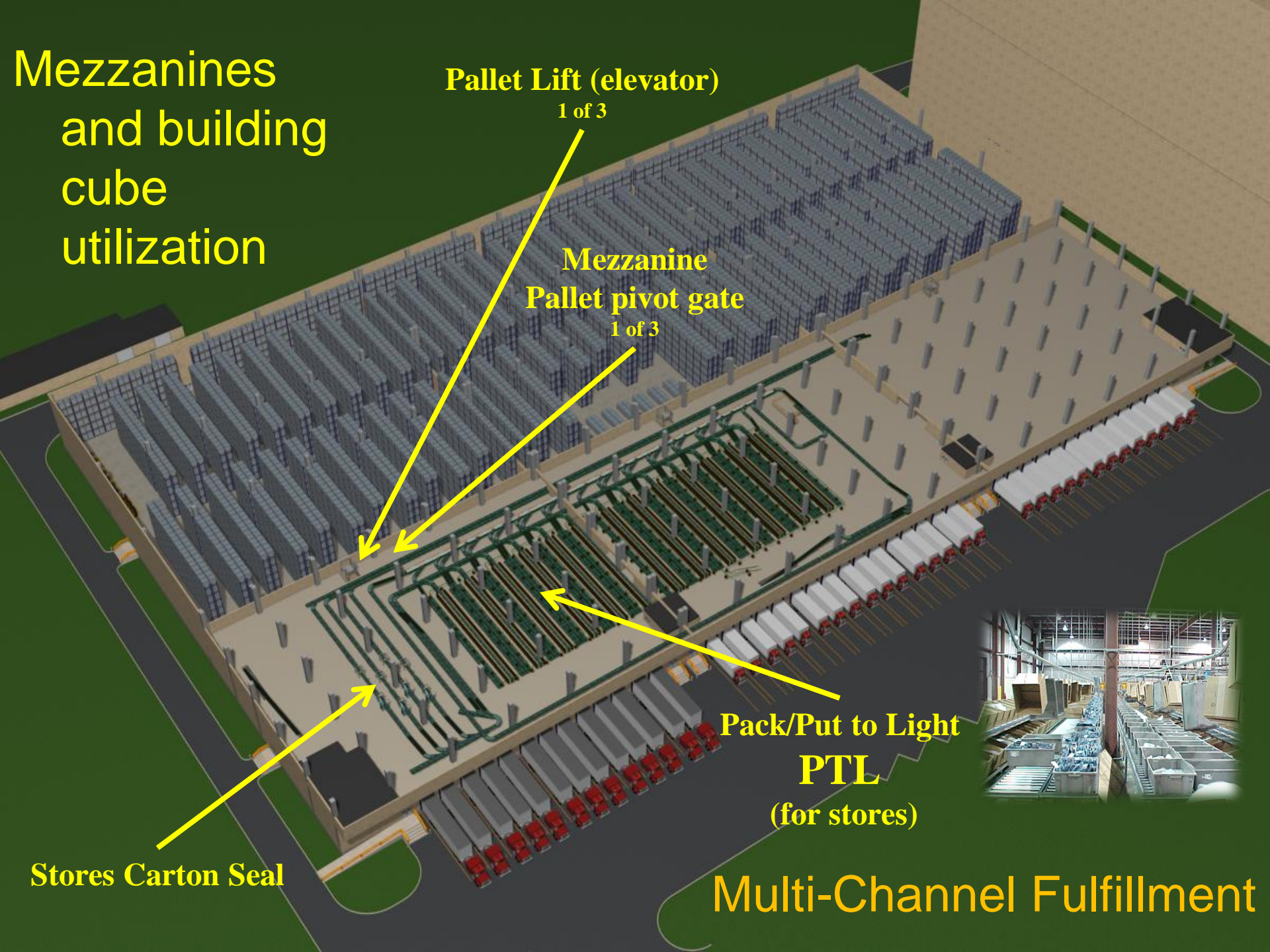
1 of 3

**Pack/Put to Light  
PTL  
(for stores)**

**Stores Carton Seal**



**Multi-Channel Fulfillment**



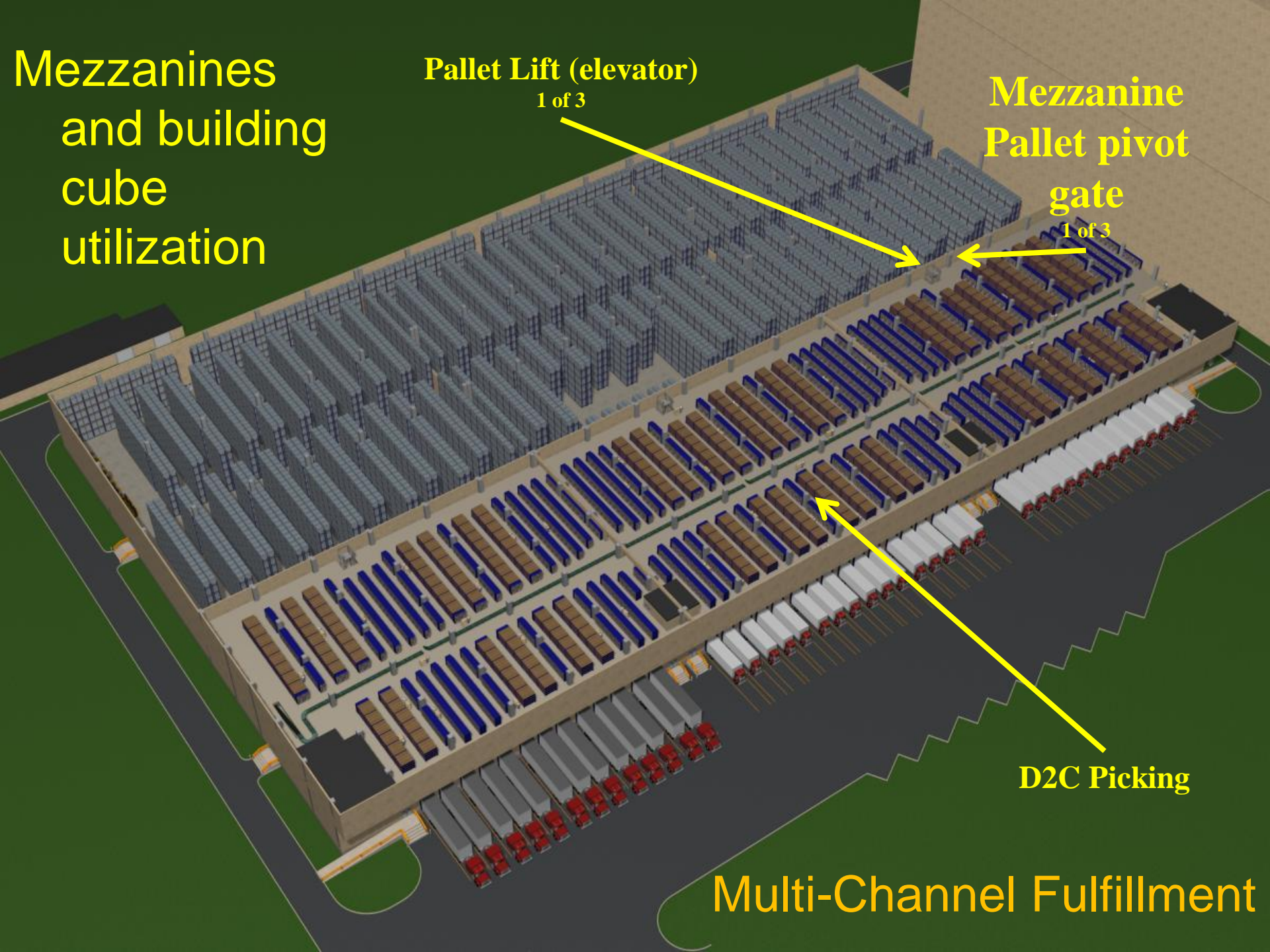
Mezzanines  
and building  
cube  
utilization

Pallet Lift (elevator)  
1 of 3

Mezzanine  
Pallet pivot  
gate  
1 of 3

D2C Picking

Multi-Channel Fulfillment



# Void Fill



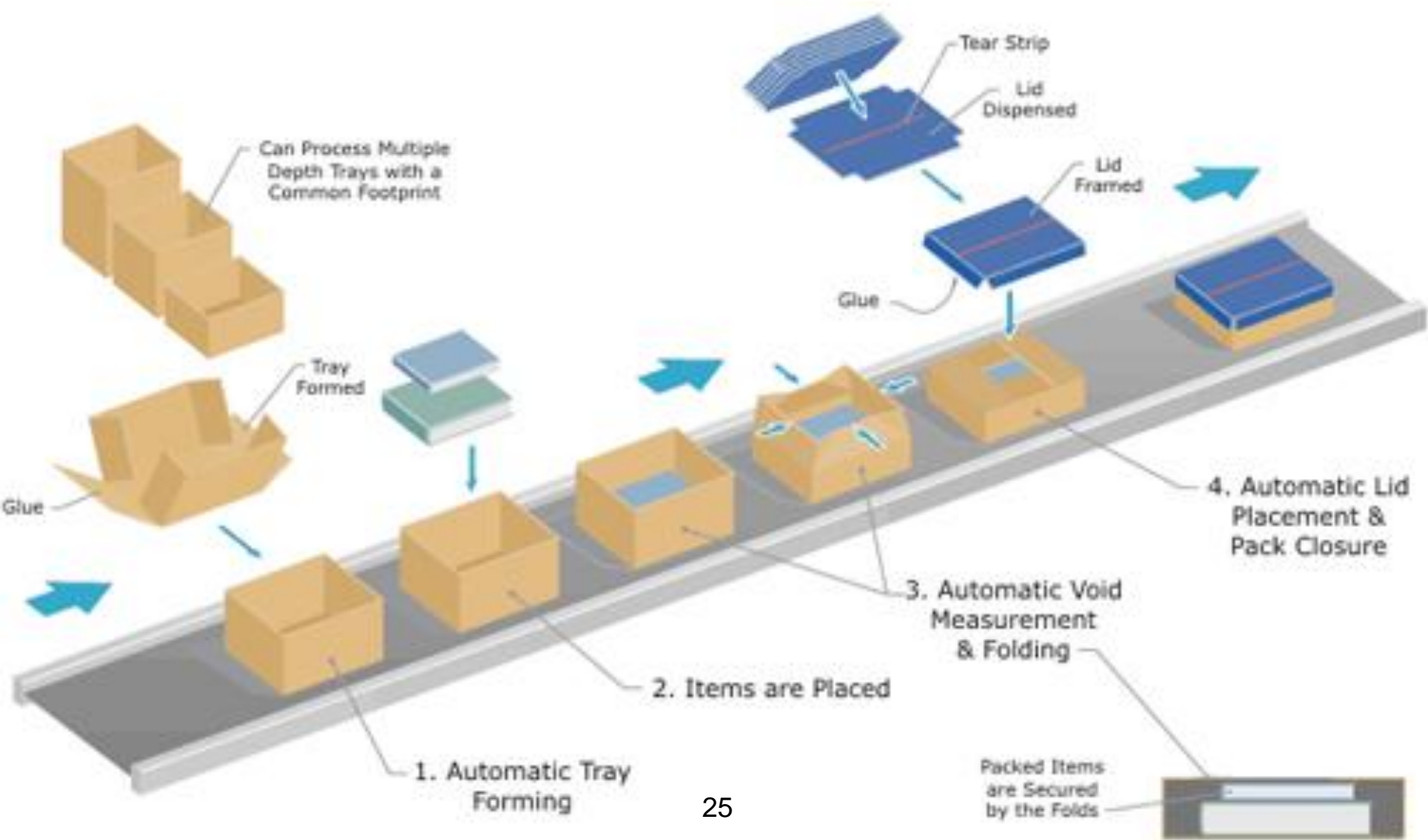
1. *3 operating speeds:*  
30" per second  
45" per second  
55" per second
2. *Produces "PaperStar" material-*  
Geometrically, the most efficient shape for void-fill applications.
4. *Stores multiple boxes of paper-*  
Typically more than a day's production thus increasing uptime.



PolyAir



# Void Reduction

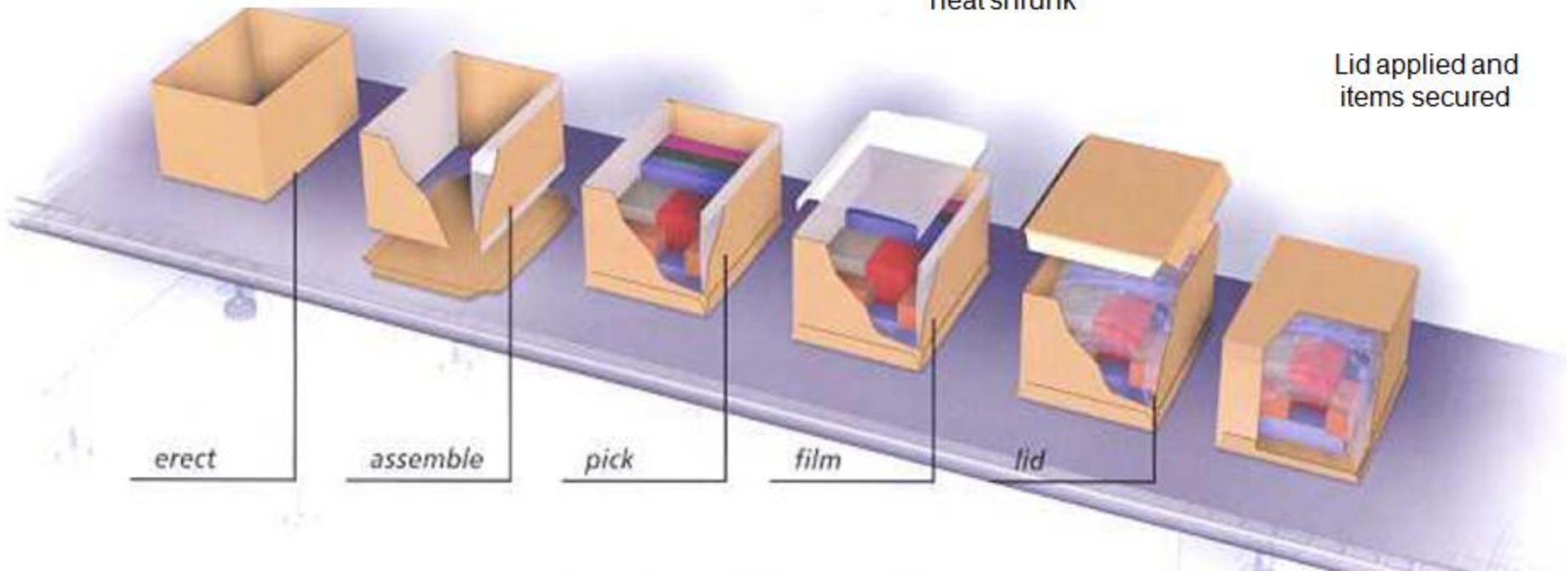


# Void Reduction

Sides of carton lined with film

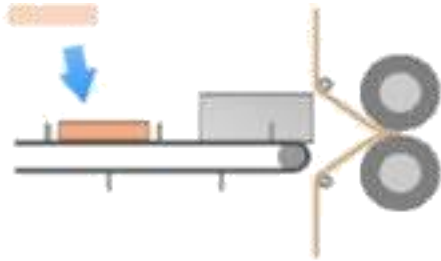
Top film fused to side films and heat shrunk

Lid applied and items secured

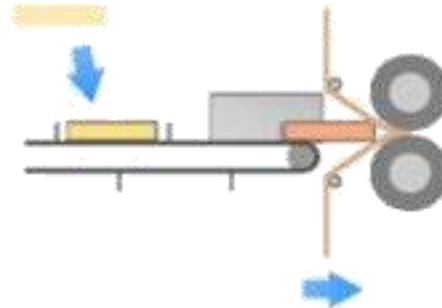


# Single Piece Orders – Automated Packing

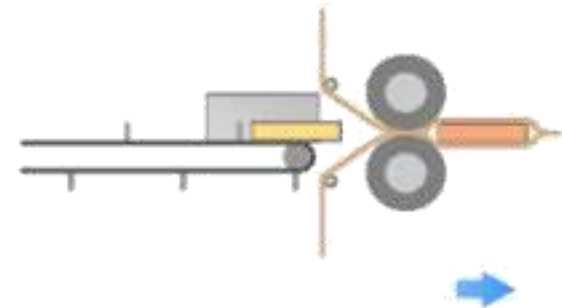
## Envelope



The operator places the product on the belt and lets the system go to work.



The product(s) is automatically fed into the system where it is packed and exited.

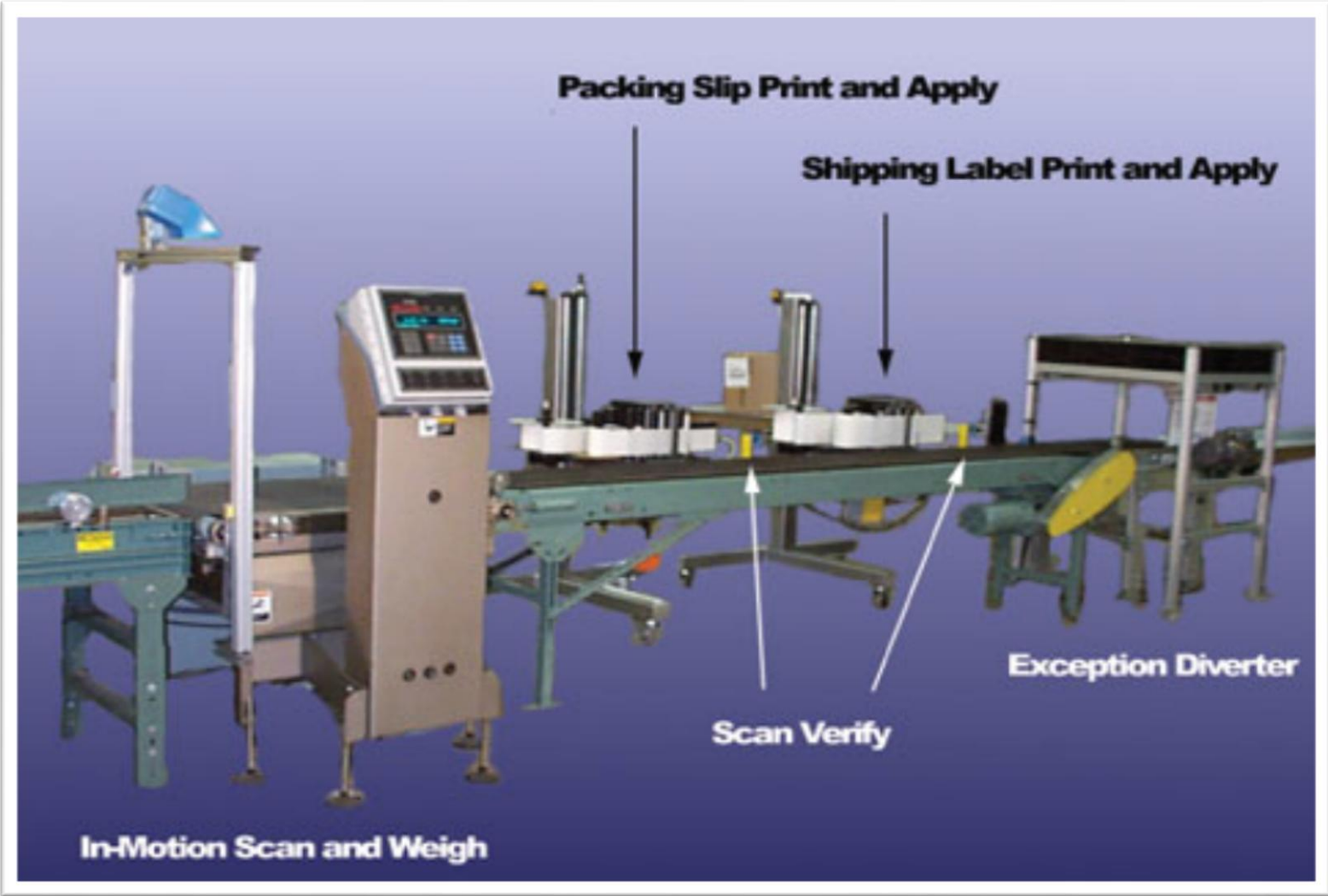


The packed product(s) is then either manually or automatically labeled.

## Bag



# Automated carton labeling



# Duplex Pack Slip Auto Labeler

## FRONT Shipping Label

FAVORITE DISTRIBUTOR 1 LBS  
123 PRODUCTIVE LANE 1 OF 1  
FORMS, USA 00000-0000

SMART CUSTOMER  
(555) 555-5555  
456 SECOND STREET  
THEIRTOWN, USA 60640

US 776 9-01

UPS GROUND  
TRACKING #: 1Z 123 X56 03 1234 567 9

To view & print 8.5x11 packing slip go to [www.abcco.com/jackingslip](http://www.abcco.com/jackingslip)

**TEAR HERE FOR PACKING SLIP**  
PACKING SLIP UNDERNEATH SHIPPING LABEL

Favorite Distributor 123 Productive Ln Forms, USA 00000-0000  
Smart Customer 456 Second Street Theirtown, USA 60640  
P.O. #60062  
CONTROL #0794  
ORDERED: 12/05/08  
SHIPPED: 12/05/08  
ACCOUNT NO: 2219964  
Go to [www.abcco.com/jackingslip](http://www.abcco.com/jackingslip)

UPS SHIP NO: 123-456  
TRACKING NO: 1Z123X560312345679  
PO: 60062

GOING GREEN

duplexpackslip Pat. RE 39,100 and for use under Pat. RE 38,976. Pat. Pending.

## BACK Confidential Packing Slip

Adhesive

| ITEM                    | DESCRIPTION | QTY | SHIP | BO | PRICE   | EXTENDED        |
|-------------------------|-------------|-----|------|----|---------|-----------------|
| 17001                   | WIDGET 1    | 1   | 1    | 1  | \$1.00  | \$1.00          |
| 17002                   | WIDGET 2    | 1   | 1    | 1  | \$2.00  | \$2.00          |
| 17003                   | WIDGET 3    | 1   | 1    | 1  | \$3.00  | \$3.00          |
| 17004                   | WIDGET 4    | 1   | 1    | 1  | \$4.00  | \$4.00          |
| 17005                   | WIDGET 5    | 1   | 1    | 1  | \$5.00  | \$5.00          |
| 17006                   | WIDGET 6    | 1   | 1    | 1  | \$6.00  | \$6.00          |
| 17007                   | WIDGET 7    | 1   | 1    | 1  | \$7.00  | \$7.00          |
| 17008                   | WIDGET 8    | 1   | 1    | 1  | \$8.00  | \$8.00          |
| 17009                   | WIDGET 9    | 1   | 1    | 1  | \$9.00  | \$9.00          |
| 17010                   | WIDGET 10   | 1   | 1    | 1  | \$10.00 | \$10.00         |
| 17011                   | WIDGET 11   | 1   | 1    | 1  | \$11.00 | \$11.00         |
| 17012                   | WIDGET 12   | 1   | 1    | 1  | \$12.00 | \$12.00         |
| 17013                   | WIDGET 13   | 1   | 1    | 1  | \$13.00 | \$13.00         |
| 17014                   | WIDGET 14   | 1   | 1    | 1  | \$14.00 | \$14.00         |
| 17015                   | WIDGET 15   | 1   | 1    | 1  | \$15.00 | \$15.00         |
| 17016                   | WIDGET 16   | 1   | 1    | 1  | \$16.00 | \$16.00         |
| 17017                   | WIDGET 17   | 1   | 1    | 1  | \$17.00 | \$17.00         |
|                         |             |     |      |    |         | <b>\$153.00</b> |
| SUBTOTAL                |             |     |      |    |         | <b>\$153.00</b> |
| S & H: 441712217006000X |             |     |      |    |         | <b>\$6.24</b>   |
| TAX:                    |             |     |      |    |         | <b>\$6.24</b>   |
| TOTAL:                  |             |     |      |    |         | <b>\$174.24</b> |

Favorite Distributor 123 Productive Ln Forms, USA 00000-0000  
Smart Customer 456 Second Street Theirtown, USA 60640  
P.O. #60062  
CONTROL #0794  
ORDERED: 12/05/08  
SHIPPED: 12/05/08  
ACCOUNT NO: 2219964  
Go to [www.abcco.com/jackingslip](http://www.abcco.com/jackingslip)

TERMS & CONDITIONS are available at [www.abcco.com](http://www.abcco.com) or by calling 1-555-555-0000.  
TO RETURN MERCHANDISE call 1-800-555-9876 for obtain a R.G.A. # (Return Goods Authorization #) and instructions before returning any item.

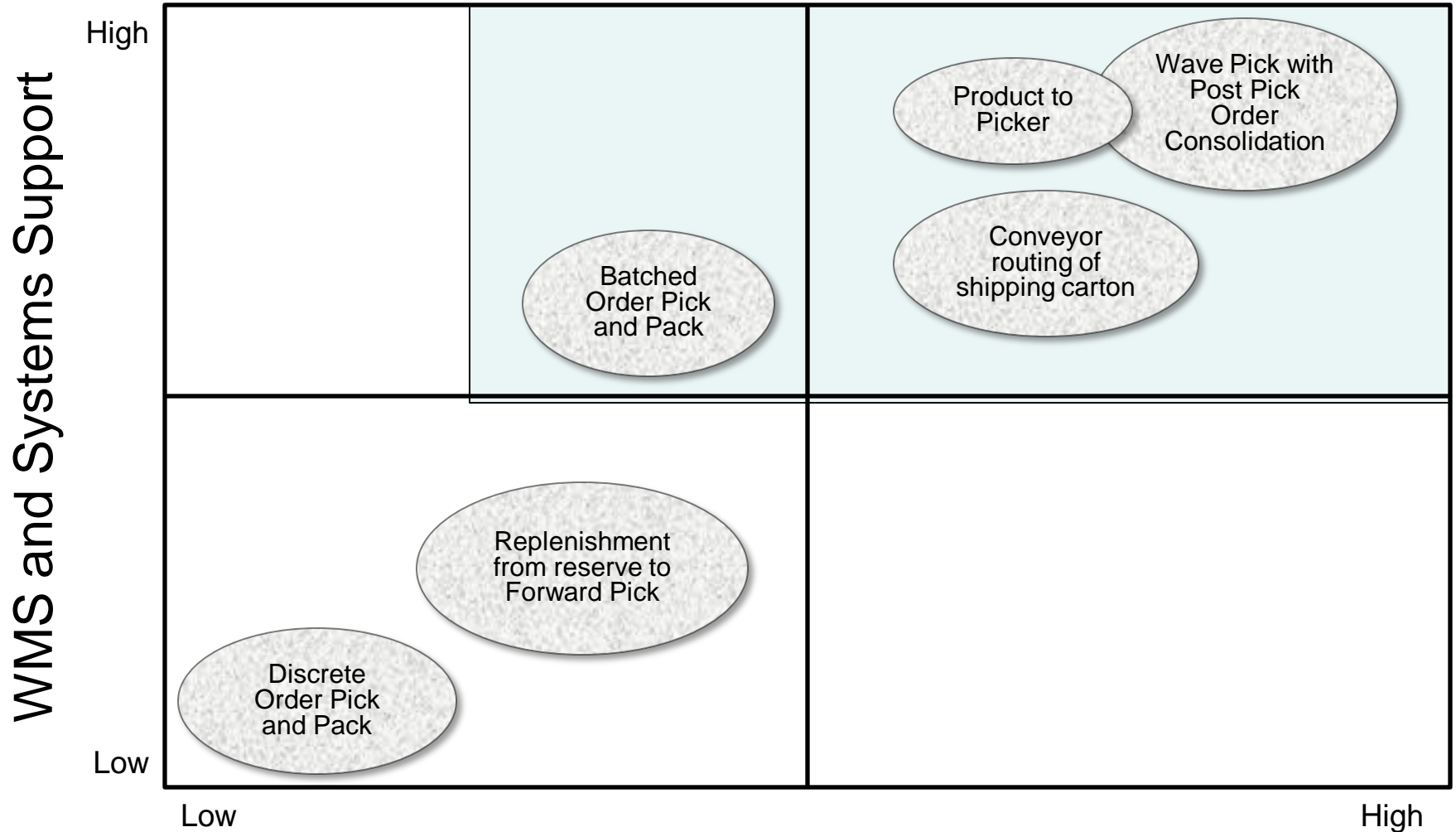
CREDIT CARD NO: SUBTOTAL  
441712217006000X S & H: TAX: TOTAL:

Adhesive

# Outbound Parcel Sort



# WMS and ECS Must Support Operation



## Automated Material Handling Equipment

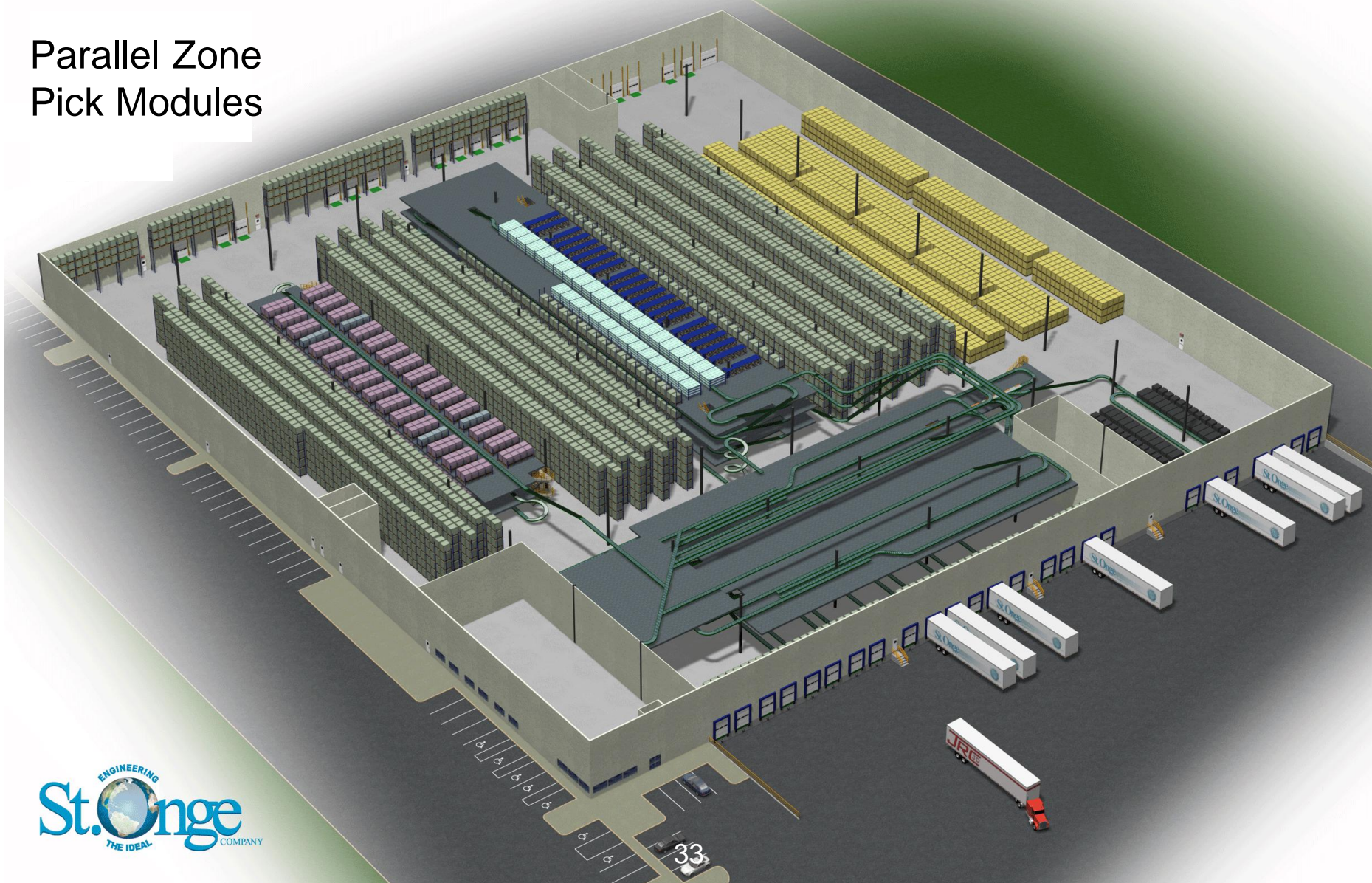
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# Case Studies



# Shipping Carton Conveyor Routing

Parallel Zone  
Pick Modules

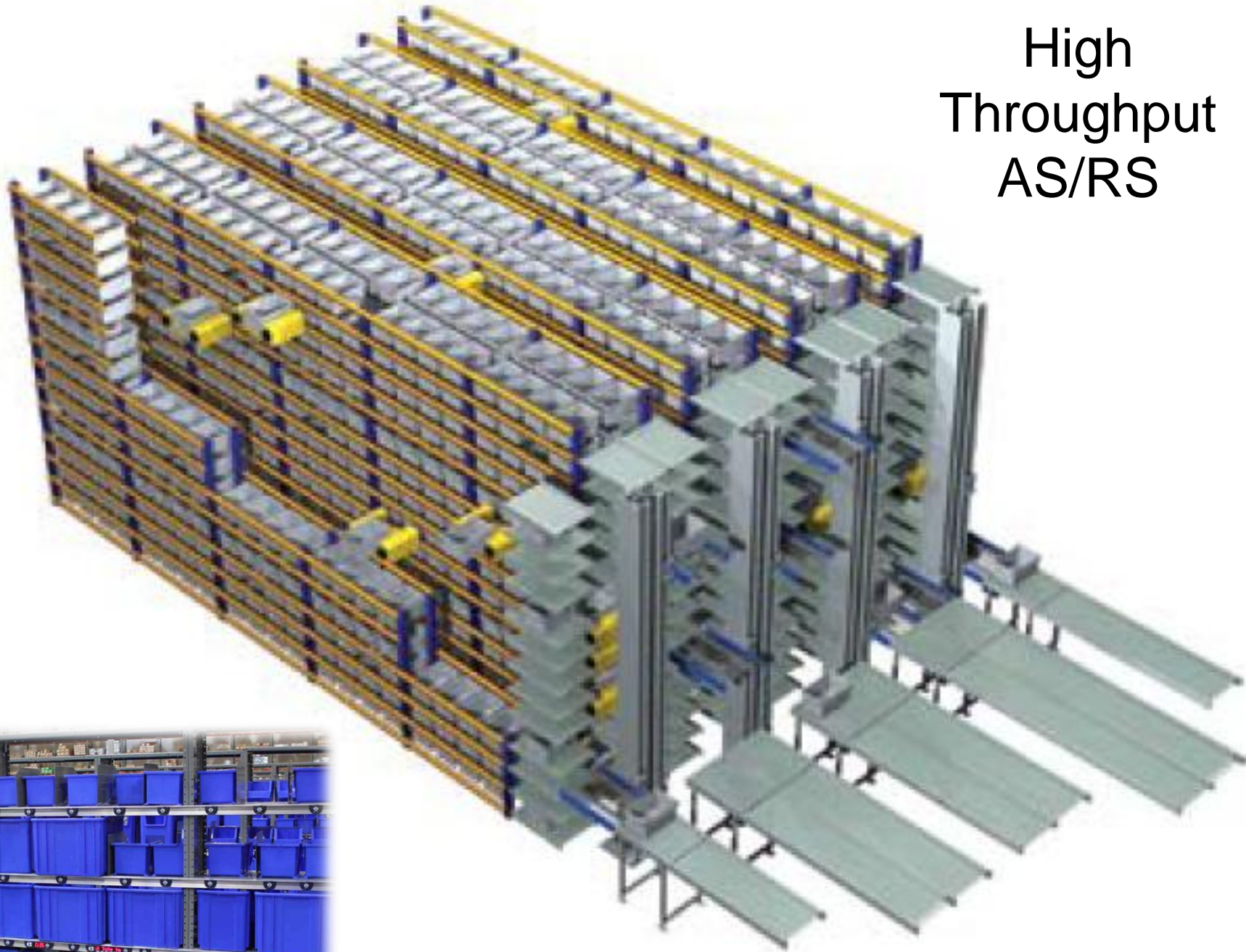


# Automated Case Pull Concept



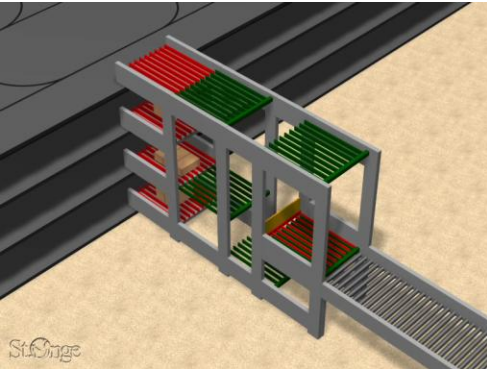
# Two Pass Garment Sort

# High Throughput AS/RS

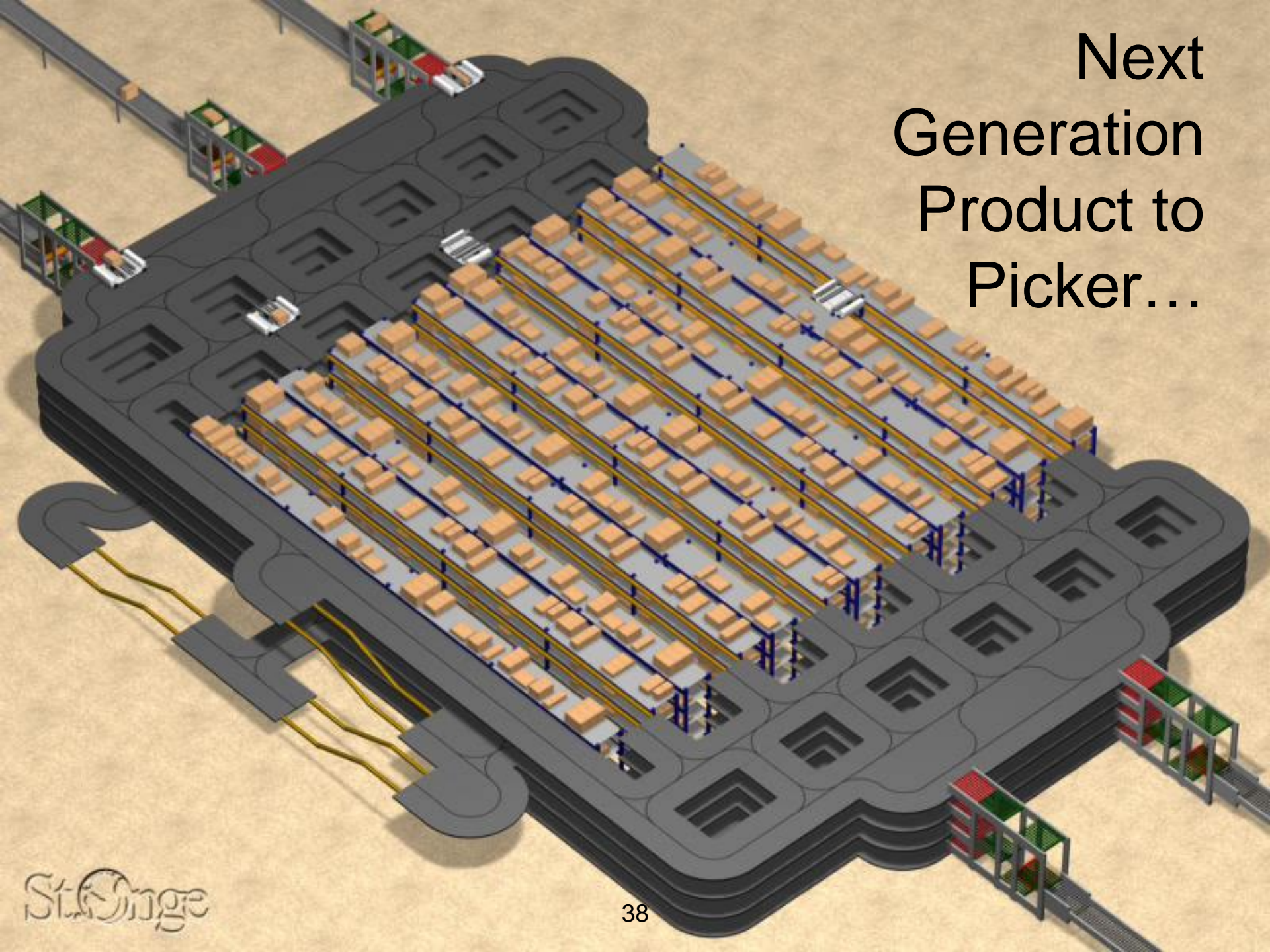


# Next Generation Product to Picker...

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# Next Generation Product to Picker...



# What Next?

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- What is the best answer for your direct to consumer facility?
  - Data model
  - Apply strategic growth range
  - Evaluate current capability to support growth.
  - Partner with independent industry leaders to evaluate your process and automation alternatives.



## *For More Information:*

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Home Page: [www.stonge.com](http://www.stonge.com)

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