

Proven Strategies to Increase Productivity and Deal with Slow Movers

Sponsored by:



Presented by:

**Allan Kohl,
President**

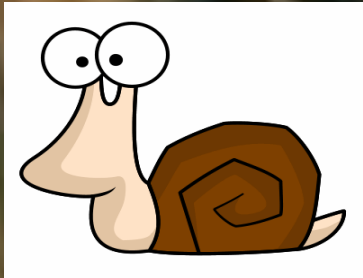
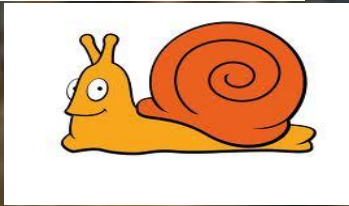


MHI

2013 MHI™ Copyright claimed as to audiovisual works of seminar sessions and sound recordings of seminar sessions. All rights reserved.



Dealing with Slooooow Mooovers

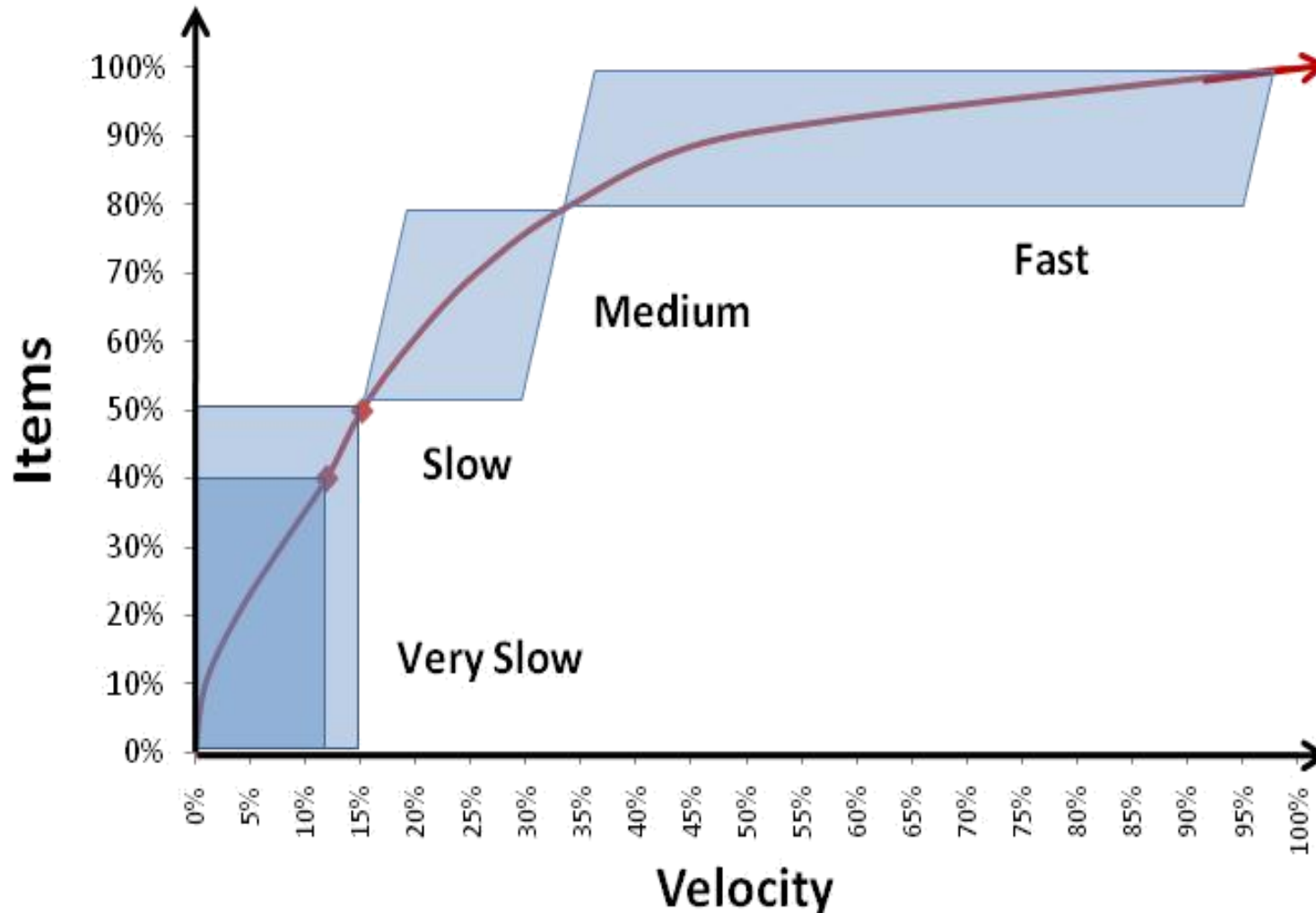


**WHAT!
There's
more?**



What Is A Slow Mover?

< 15% of total velocity is generated by 50% of items





The Challenges of Slow Movers

SKU proliferation



Customer Order ty



Route friendly delivery



Increasing costs of transport



Productivity



Accuracy



Ergonomics, health and safety



- New customers/increased variety

- *Can't live with them, Can't live without them*

- Same brick and mortar?

- Varying order profiles, one DC layout.

- 15+stops in reverse delivery sequence.

- Maximize load density

- Cost and availability of labor

- Increased pick line length.

- Pick the perfect order.

- One pass or dock merge

- Don't neglect working conditions



Slow Mover Definitions Differ by Industry

CASE STUDY #1 Automobile Replacement Parts

116,000 skus total

109,000 slow

19% of lines picked

CASE STUDY #2 Broad line Food Service

9,200 skus total (ambient)

5,500 slow:

10% of lines picked

CUSTOMER SERVICE CONSIDERATION

**Repair Parts delivery cycle: 3 hours
maximum**

Foodservice delivery cycle: 12+ hours



What Can You Do With Them?

Operating Strategies

3rd Party/Centralized

Retail Friendly

Family Group

Designated Slow

Group/Batch Pick

Restricted Ordering

Dynamic/Fixed Slotting

Customer Format

Product to Picker

Picker to Product

Material Handling Options

Bus Stop Shelving

VNA – very narrow aisle

Hand Stack

MLP – multi level pick

Flow Rack

Mechanized

- Multi level
- Pick to belt

Pick Carts, PD Stations, Double pallet Jacks

Automation

- Mini load
- Carousel
- Robot



At the end of the day.....

Slow Moving or Not, if it Sells You Need it

- **Critical for you to determine your definition of slow moving items for your network**
- **Understand the impact these items have on your operations**
- **The solution for you, will be different based on your definition and business needs**



Strategies to Increase Productivity

It's not what you have – It's what
you do with what you
have.....





Productivity Drivers – Impacts on Performance

Top Common Factors:

Variables that are sometimes beyond your control

- Volume
- Order Size
- Pick Line Length
- Hit Rate/Density

Opportunities to lower costs:

Variables within your control

- Engineered Standards
- Incentives
- Voice Technology
- Order Relationship
- Selection Method



The Law Of The Fish

The big fish eat the little fish



www.ft.com/join



The Law Of The Fish

Law Of The Fish



The Quick Fish Eat
The Slow Fish



Where are we today?

- SKU proliferation
- Increased customer service requirements
- Demands to reduce inventories
- Demands to increase operating efficiency and asset utilization
- Demands for increased through-put
- Demands for decreased costs
- Demands for increased responsiveness
- Increasing regulatory oversight. More aggressive enforcement by OSHA, the EPA and other agencies like USDA
- Increased sustainable design in DC construction and operations
- Rising interest rates makes justifying investments more difficult
- Governmental actions making it easier for workers to unionize



Where are we going?

Trends/Activities that *enhance* productivity:

- Automation/Hybrid solutions
- Technology improvements
- Retail friendly deliveries
- Collaboration
- Ergonomics



Bottom Line Tactical Benefits

Savings from an Increase in Total Throughput Productivity
by a Single Case per Hour

Type of Operator	Avg. Cases Shipped per Week (dry)	Annual Hours Eliminated	Annual Savings Generated (@ \$20 per hour)
Retailer	495,000	3,762	\$75,000
Wholesaler	311,000	6,089	\$122,000
Foodservice	96,000	3,030	\$61,000



What does it mean?

“Tactically speaking”

DoMoreWithLess

Milk your WMS for More

- can your WMS do more to reduce labor costs, improve inventory management, attain more accurate shipments, and improve space allocation?
- what else can your system do?
- have you looked into add-on capabilities?

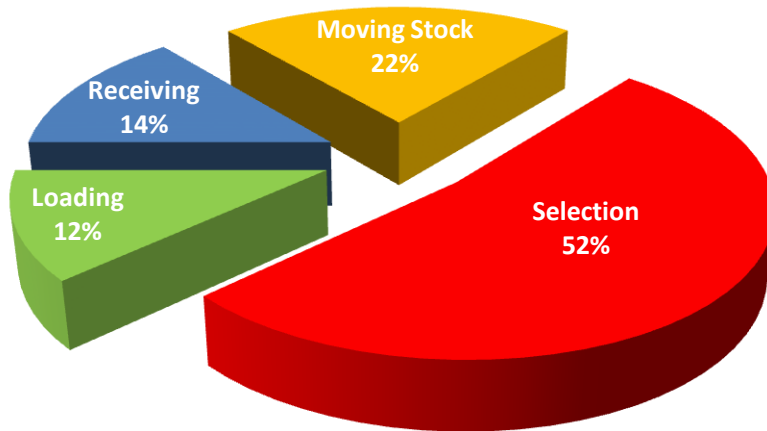
Use challenging economic times as an opportunity to scrutinize operational efficiency to help weather the storm and reap benefits when the market turns



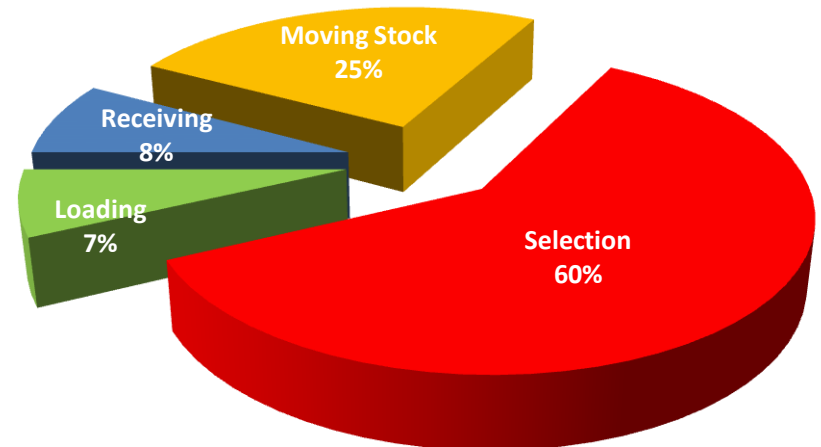
KOM 2012 Benchmarking Results for Direct Labor

Dry Direct Paid Hours = 70% of Overall Labor Expense

Average Direct Hours



Best of Breed Direct Hours

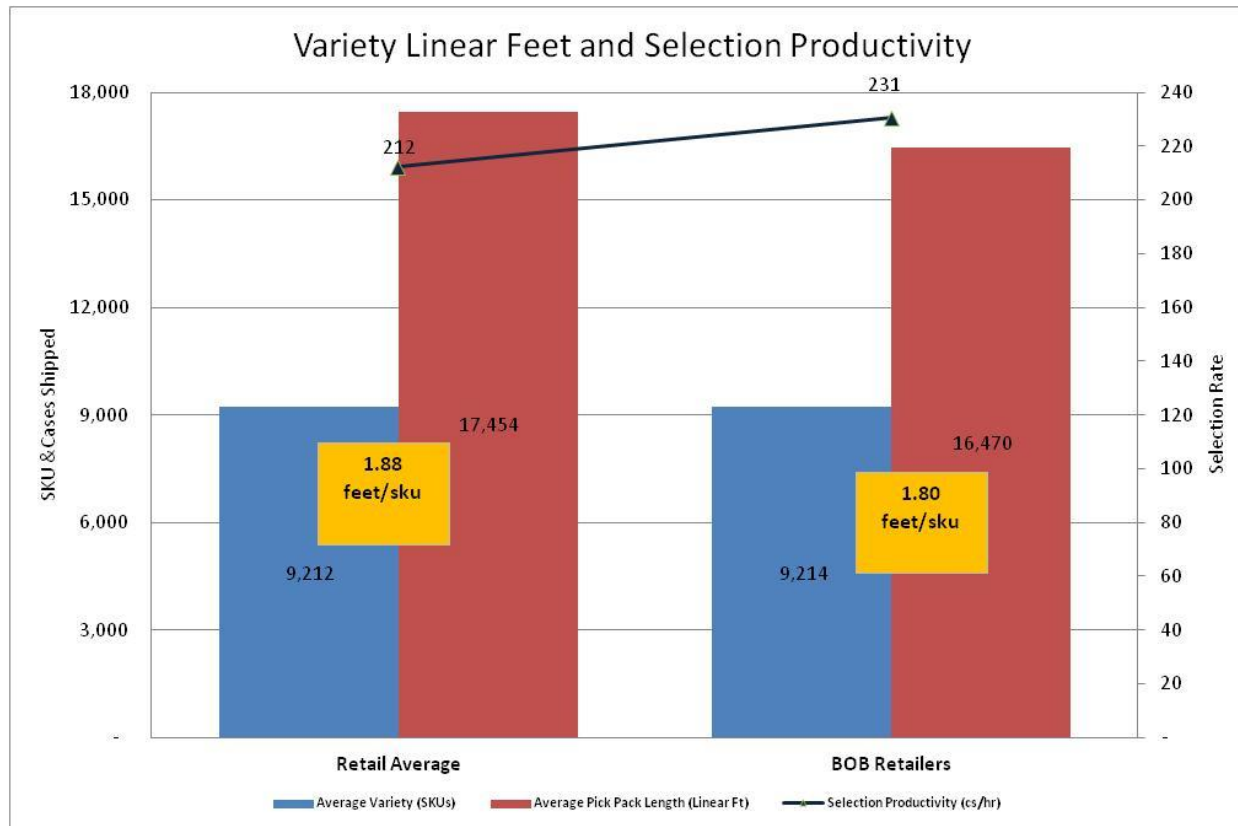


“B.O.B Knows Selection is Critical”

Order picking is costly and accounts for **more than 50%** of warehouse direct labor expense



Impact of Variety on Pick Path Length and Selection Productivity

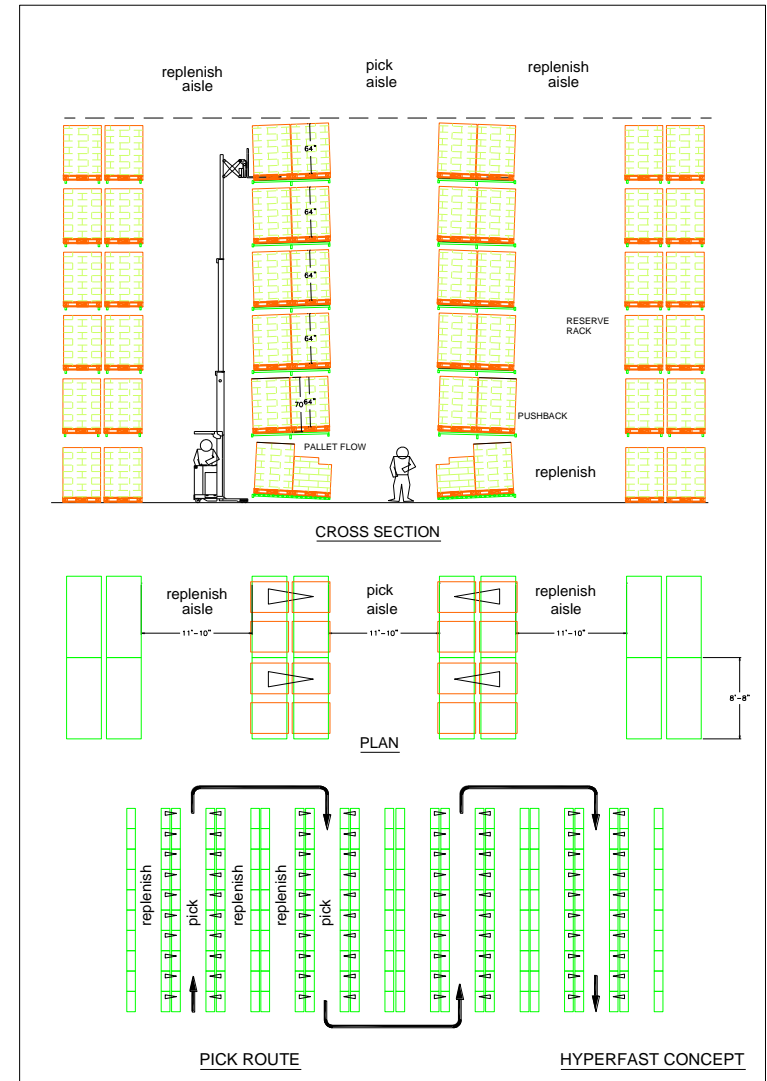


Known fact: Variety impacts Pick path length
Retailer Best-of-Breed's Pick Paths are 4% shorter per SKU stocked compared to the average
Shorter the Pick Path Length, better the Productivity!



Material Handling Alternatives

- Hyper Fast Concept:
- Provides the following Advantages:
 - ✓ Simultaneous Shipping/Receiving
 - ✓ Dedicated Order Picking and Fork lift aisles
 - ✓ Ergonomic Slot Heights
 - ✓ Future Layout Flexibility
- Disadvantages:
 - ✓ Not 100% Store Aisle Friendly
 - ✓ additional sq. ft.(3.5% additional overall space)





Conventional Picking Strategy



**Fast Movers:
Pick at Ground,
Reserve Above**

**Double and Triple Jack
4, 8, 12 order batch
Heavy on base, light-
crushable on top

Slow mover pick?**



Ground Level Pick Slots: Fast, Medium, Slow (er)



Fastest Movers
Pushback Pallet Flows,
1 level pick

Slow Movers
Handstack, 6 per
beam

Medium Movers
2or 4 per rack



Ergo 2 level





Design Considerations: Travel

Pick time is 60% travel
Line Length vs. SKU Variety

*Distance is the Enemy
of Productivity*





Ground Level Pick Options



Roller-conveyor



Wheel-track



Skate Wheel



Duck-in Shelving



Ground Level Pick Options



Case Flow-pushback



Dedicated Aisles



Man-Up Pallet Jack



Slow Movers Storage and Picking



**VNA:
Very Narrow Aisle**

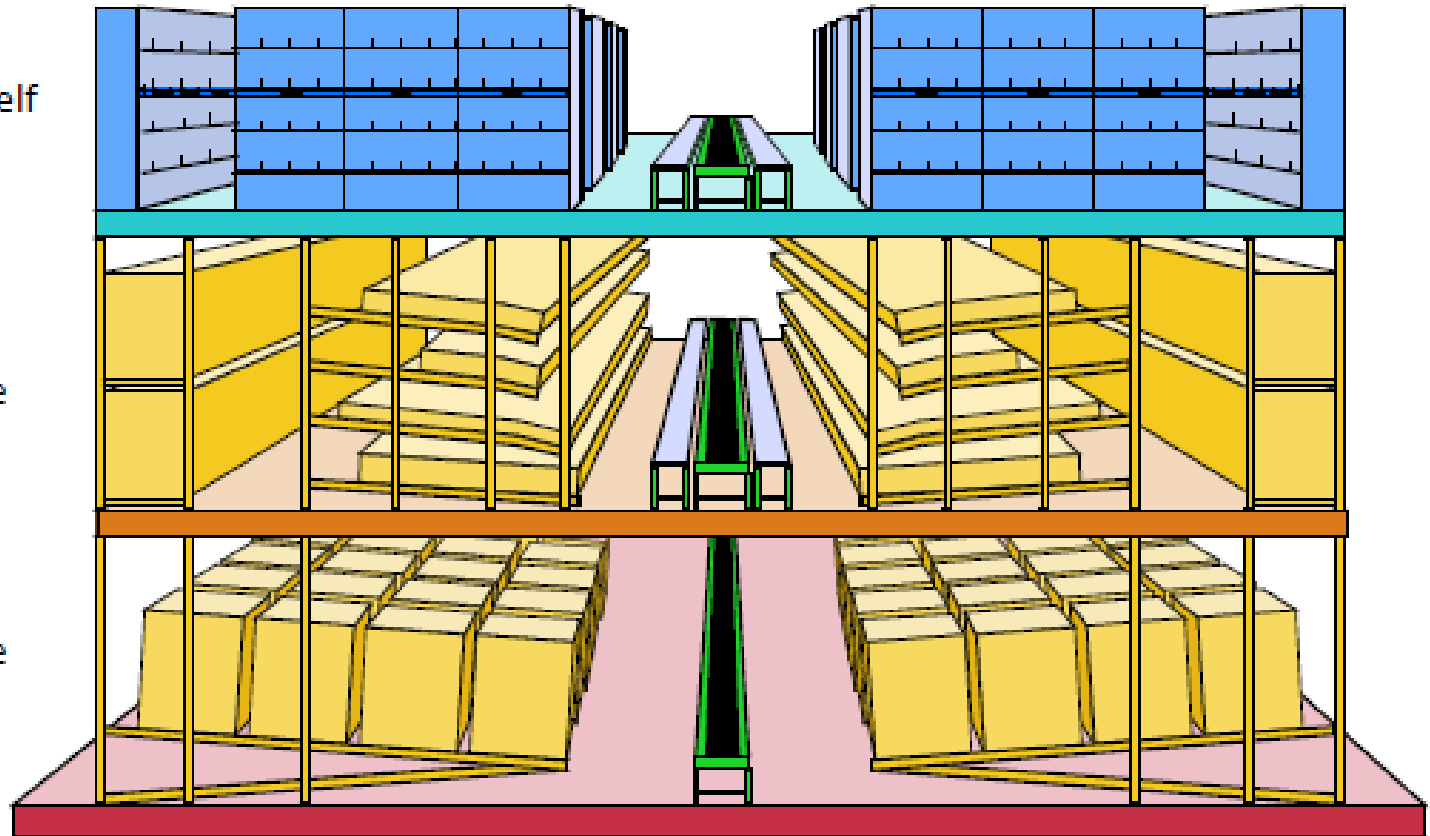


Mezzanine Pick to Conveyor System

Bin or shelf
picking

Split Case

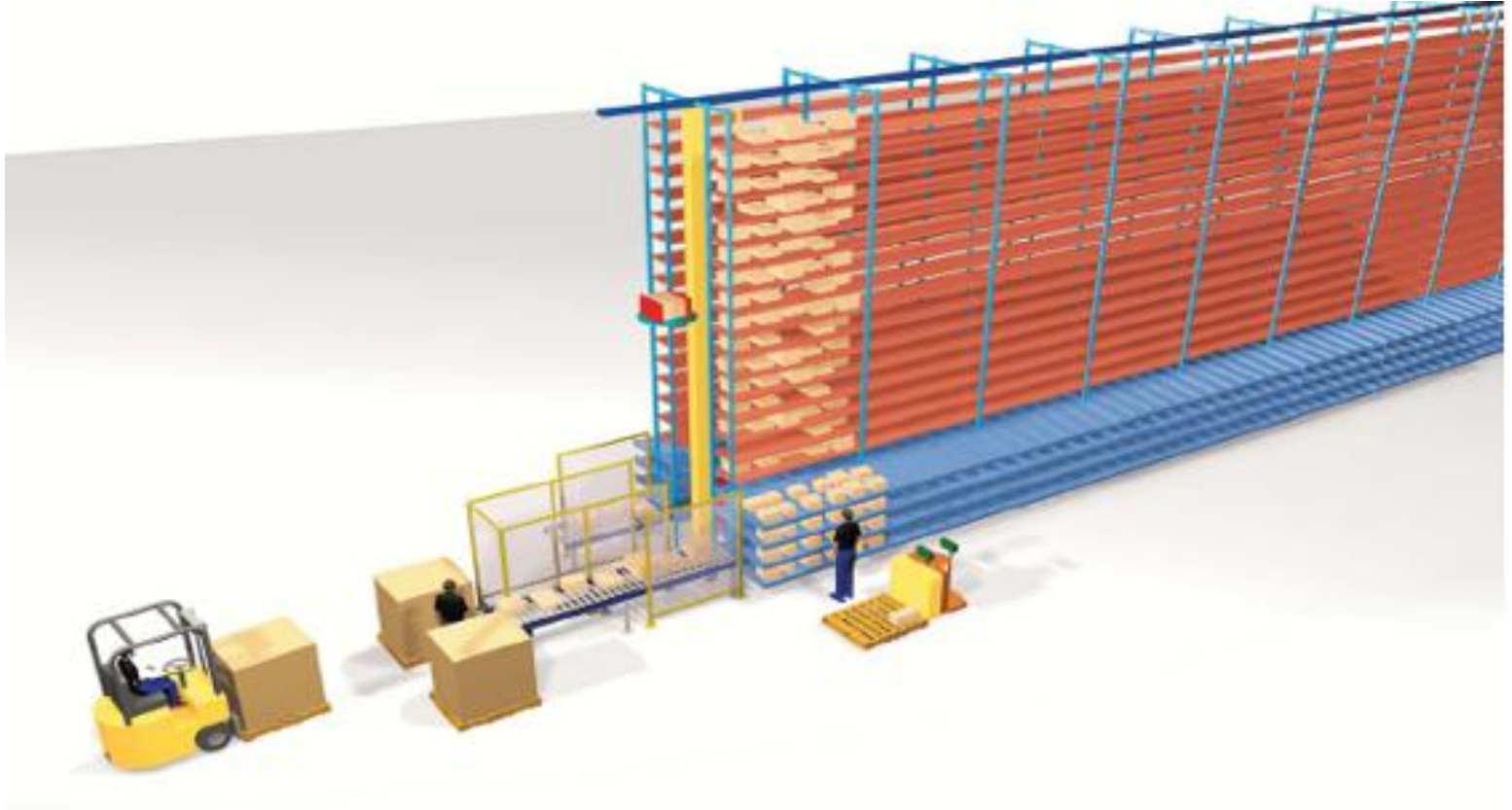
Full Case



**Conveyor Speed a
Factor**



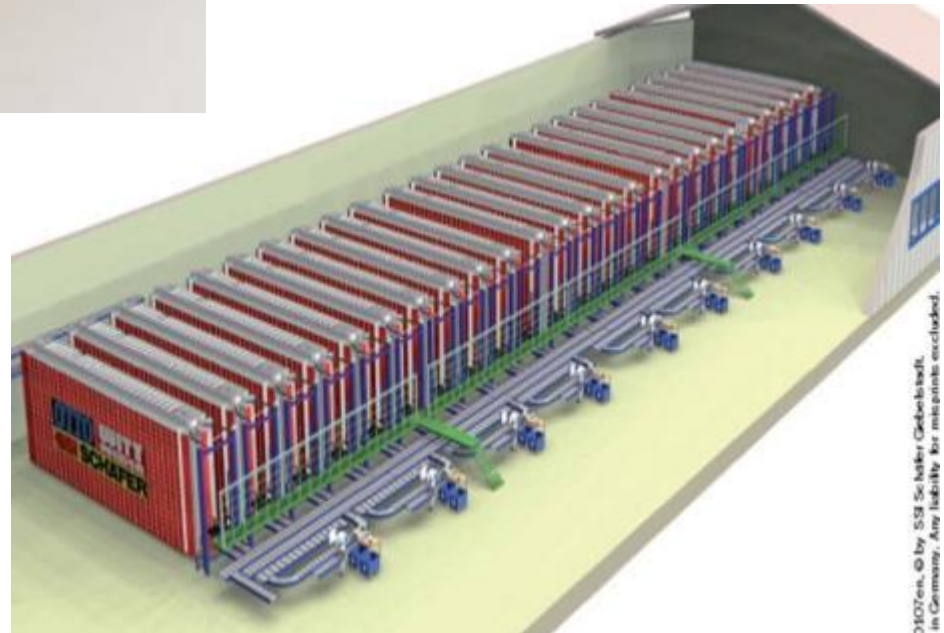
Mini-Crane



**Product to Pickline
Man to Product**



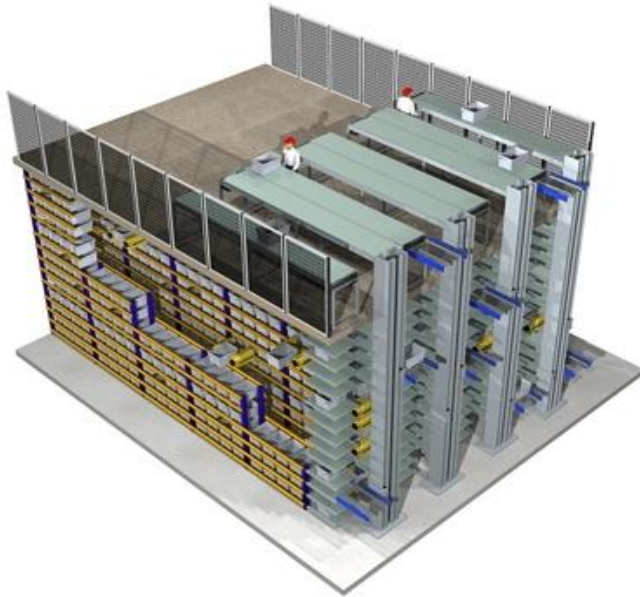
Carousel : “Product to Picker”



© 2015, © by SSI Schaefer Logistik AG, in Germany. Any liability for misprints excluded.



Mini-Shuttle: “Product to Picker”





Mobile Shelves: “Shelf to Picker”



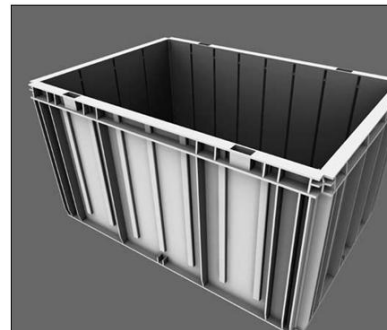
Product to Picker
Expandable
Multiple Packers
Disaster Recovery
Configurable



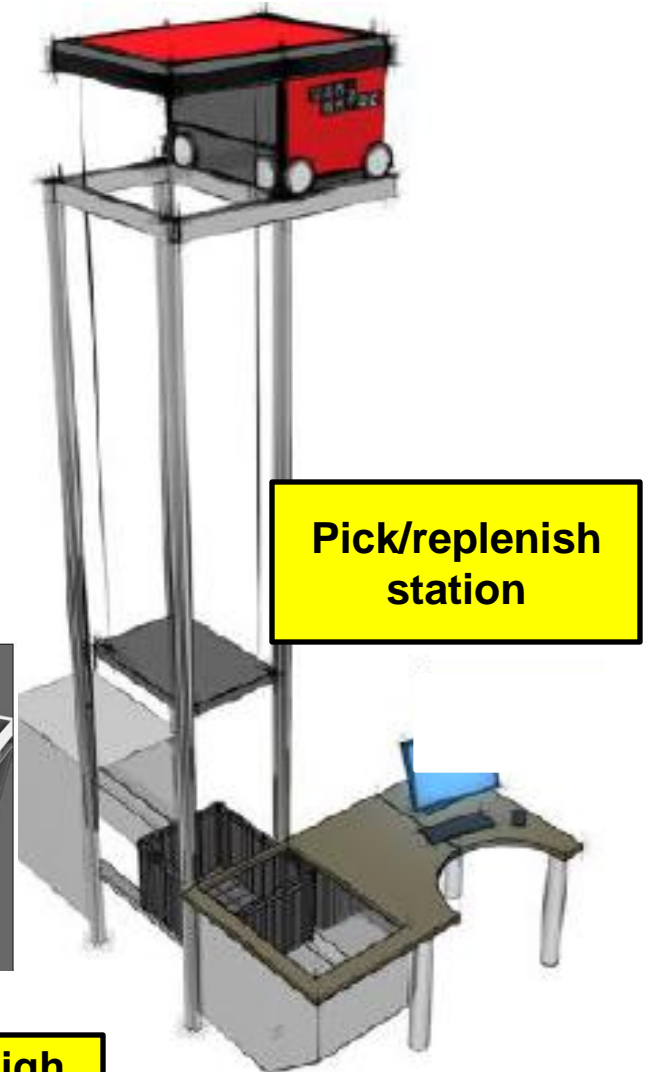
Stacked Totes: “Product to Picker”



50,000 totes = 16,000 sf

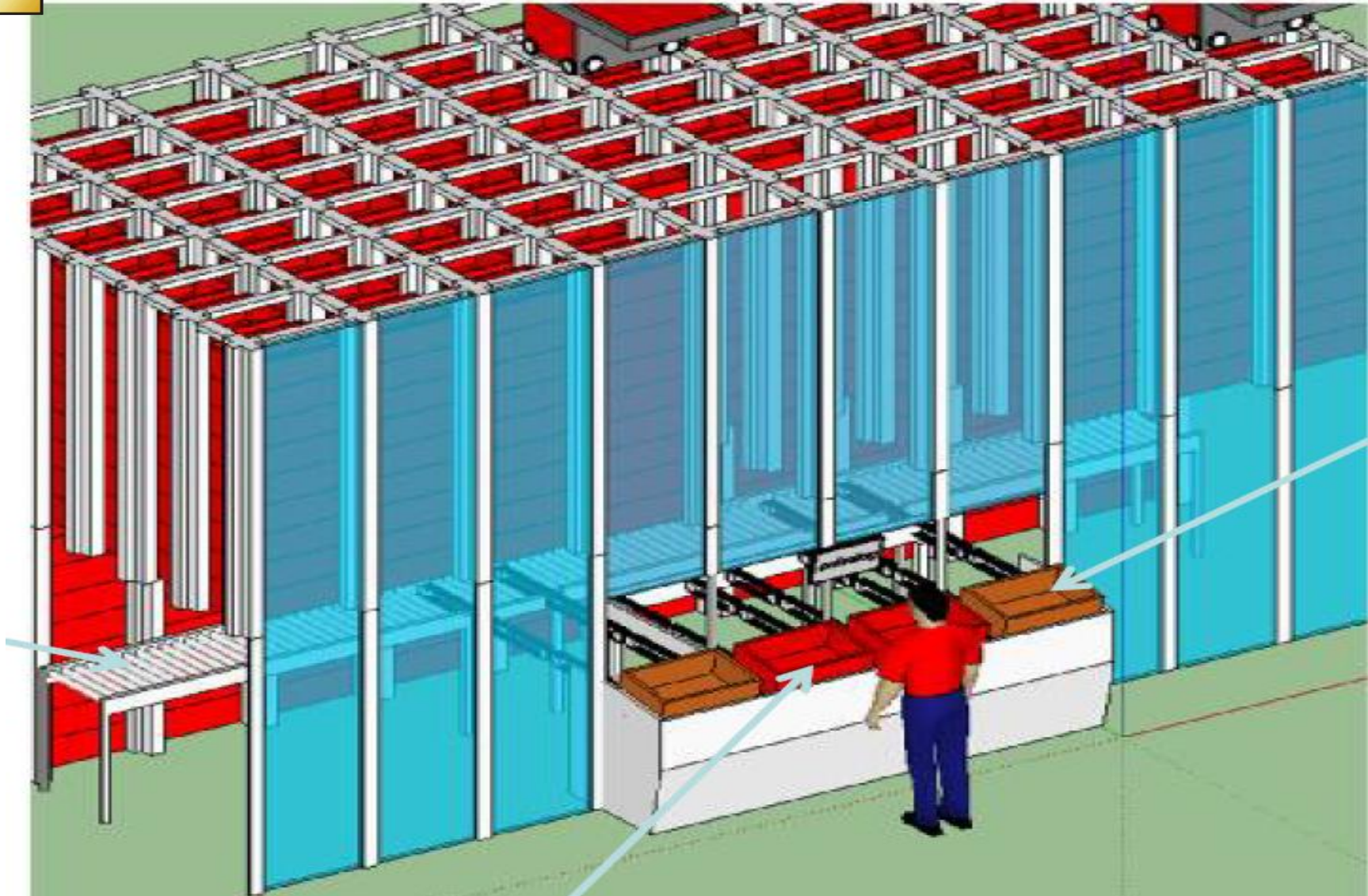


16" x 24" x 12" high





Stacked Tote Pick Station



CASE STUDY #1



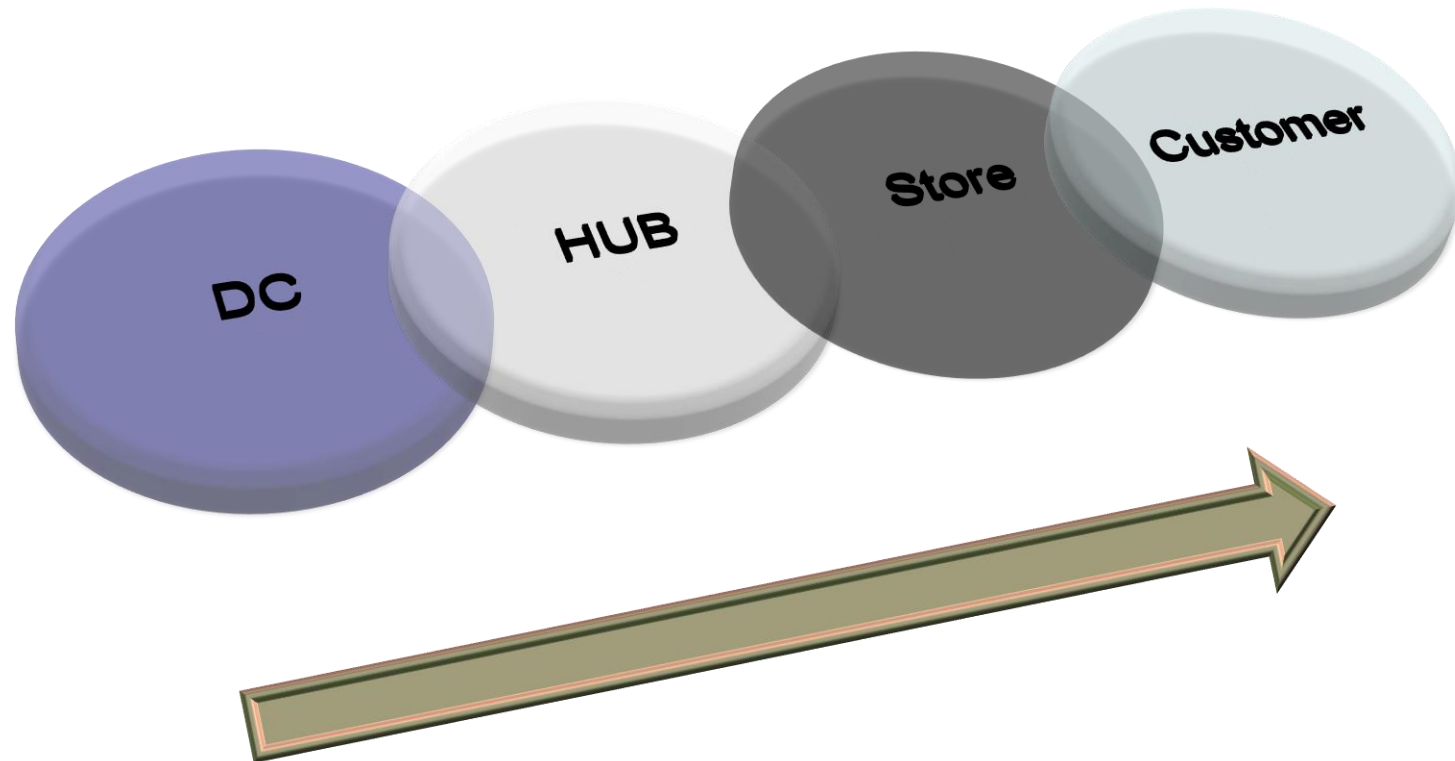
Automotive Replacement Parts

KOM INTERNATIONAL





HUB & Spoke Regional Network





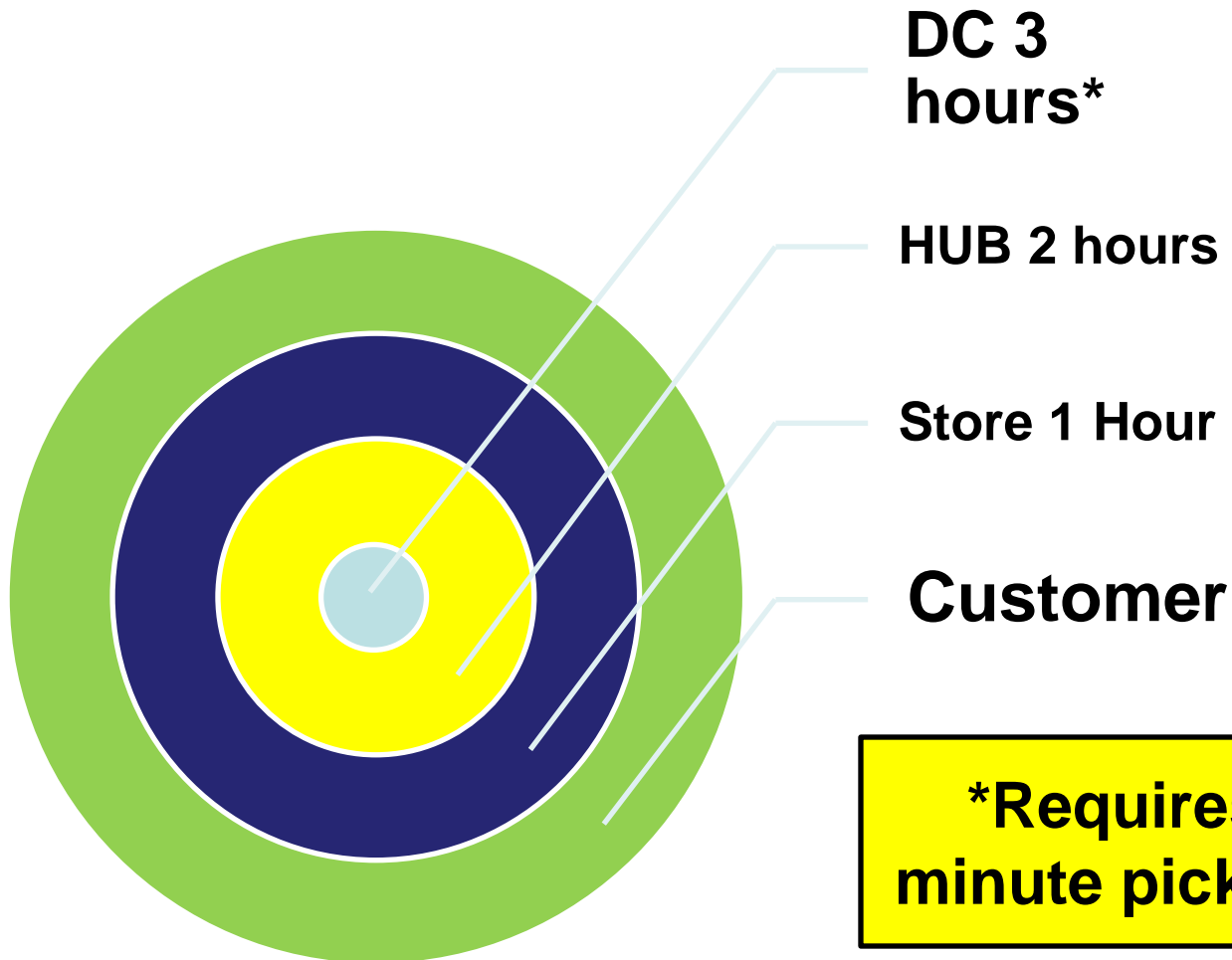
Activity Profiles

<u>Category</u>	<u>Range</u>	<u>SKUs</u>	<u>Annual Units</u>
Fast	> 50 units/year	7,000 / 6%	81%
Slow	< 50 units/year	36,000 / 31%	18%
Slower	<= 3 units/year	40,000 / 34%	1%
Slowest	0 DEMAND	33,000/ 29%	0
Total		116,000 /100%	100%

Slow & Slower
93% of SKUs, 19% of units
Floor
6% of SKUs, 81% of units



Customer Service Targets



***Requires 15
minute pick cycle**



Variety Profile

12 months Demand (Units)	SKUs
≤ 1	16,000
$1 \leq 2$	12,000
$2 \leq 3$	7,000
$3 \leq 12$	27,000
$12 \leq 26$	11,000
$26 \leq 50$	7,000
$50 \leq 2000$	13,000
> 2000	400
Total	93,400

**Mechanized
Pick**
48% skus
10% lines

VNA Pick
38%skus
1% lines

**Ground
Pick**
14%
skus
89%
lines



The Challenges: “immediate picks”



**15 minute Pick to Dock Target
30 minute conveyor circuit**



Systems Considered

Objective: **AUTOMATION OF SLOW MOVERS
for IMMEDIATE PICK**

Mini-Crane: **Trays to ground level pick aisle**
90 skus/hour

Mini-Shuttle: **Trays to dock area pick station**
400 skus/hour

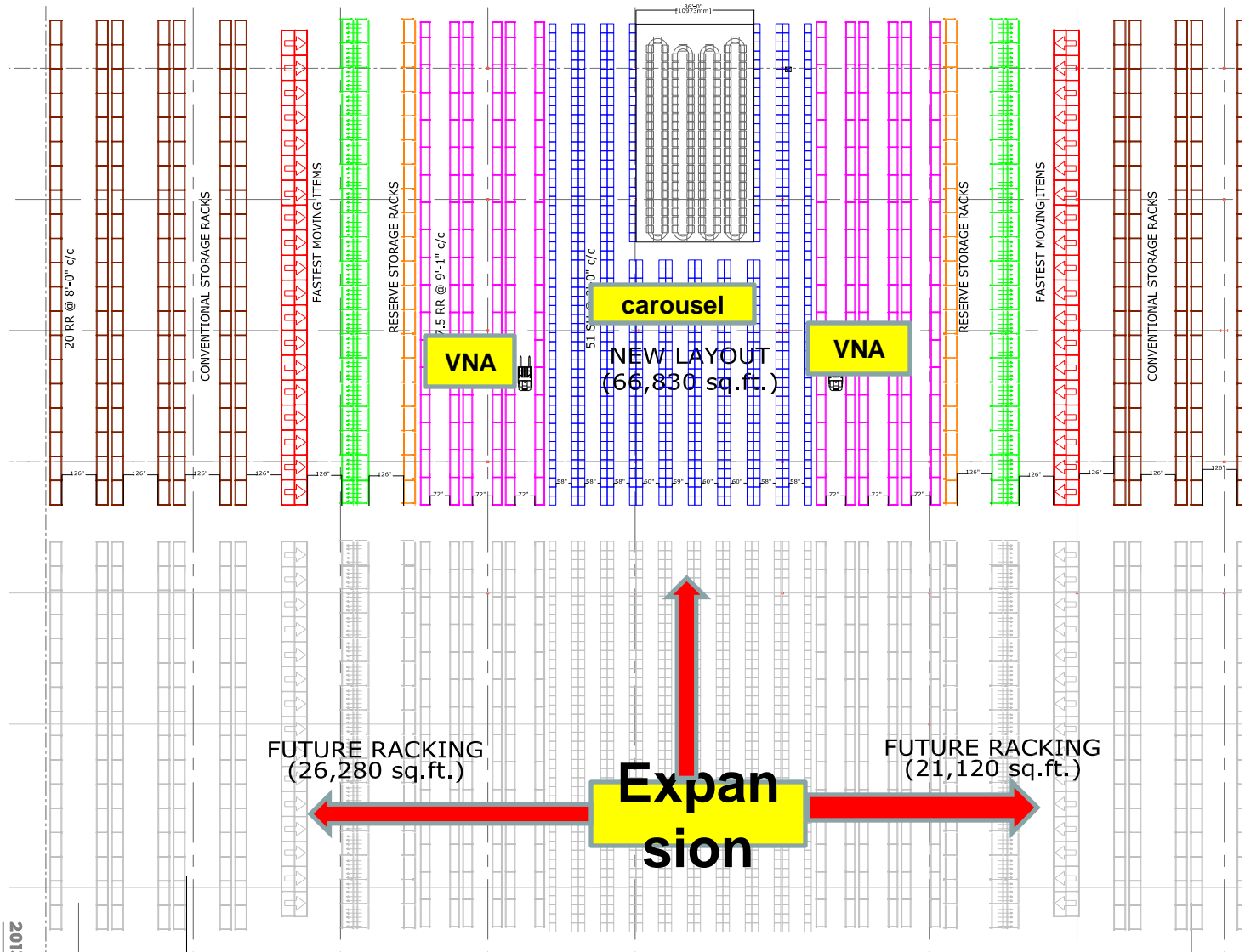
Carousel: **Trays to dock area pick station**
1000 skus/hour

Mobile Shelf: **Shelves to multiple pick stations on dock**
300 picks/hour PER pick station

Carousel

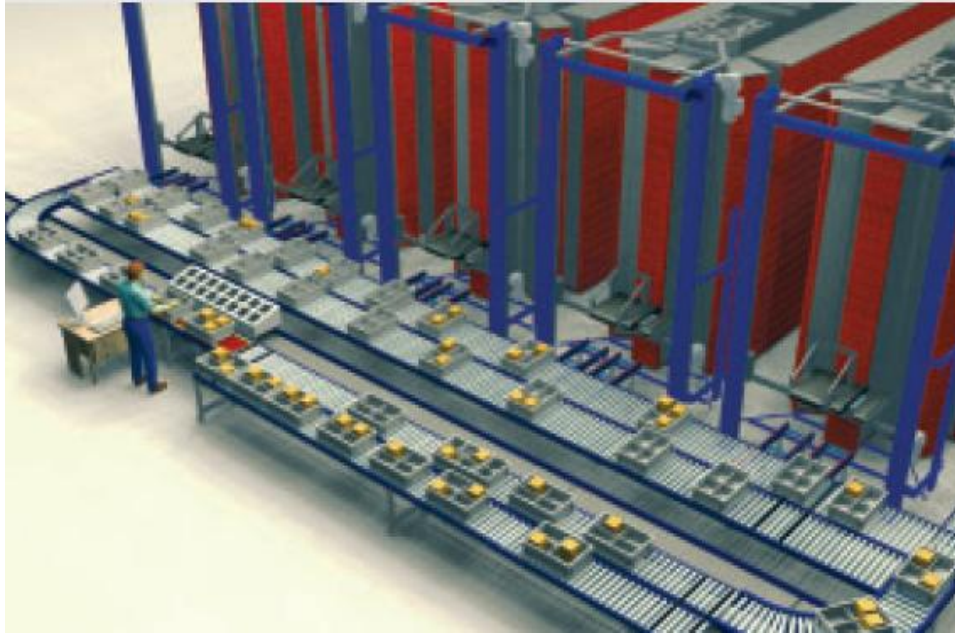


System Concept: VNA/ Racks/ Carousel

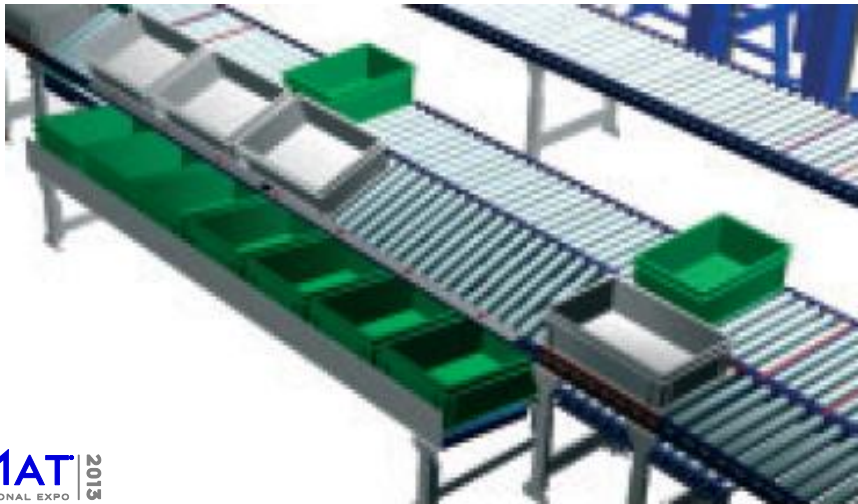




Carousel and Pick Station



**800 picks/hour
Light directed
Dock to Stock
Stock to Dock
Tote
Consolidation**





The Carousel Solution

- ✓ 800 sustained picks/hour possible per module; 1,000 peak
- ✓ Continuous dock to stock for receipts and returns.
- ✓ Simultaneous immediate pick and replenishment pick stations.
- ✓ Automated access up to 92% of skus, 19% of shipments.
Slow and slower categories
- ✓ Facilitates new SKU introduction
- ✓ System directed tote consolidation
- ✓ Visual Light directed pick
- ✓ Weight check option.
- ✓ Disaster recovery possible
- ✓ Reduced storage footprint
- ✓ Improved labor productivity

The Payback

**Market share/business growth
ROI?: to be determined**

CASE STUDY # 2



Broad Line Food Service

KOM INTERNATIONAL





Distribution Network

BRANCH	Total Sq Ft	Frozen Food	Dry Grocery	Cooler / Meat	Cold Dock	Dry Dock
Branch #1	591,000	172,000	172,000	60,000	59,000	25,000
Branch #2	245,000	60,000	78,000	32,000	22,000	15,000
Branch #3	342,000	80,000	84,000	42,000	32,000	26,000
Branch #4	308,000	67,000	70,000	40,000	26,000	18,000
Branch #5	195,000	33,000	47,000	24,000	12,000	9,000
Branch #6	64,000	11,000	37,000	8,000	5,000	3,000
Branch #7 (2014)	401,000	104,000	176,000	55,000	33,000	33,000
TOTAL	2,146,000	527,000	664,000	261,000	189,000	129,000

22,000 SKU's
26,000 customers
Next day delivery



Typical Activity Profile: ambient

	SKUs	<u>Conventional</u>		
		% cases	% Cube	%
Floor	3,700	93	95	90
VNA	<u>5,500</u>	7	5	10
TOTAL	9,200			



Slow Movers Storage and Picking



VNA:
Very Narrow aisle





Dock Merge

delays,damage,errors and labor



Only Touch Material When You Can Add Value



VNA Merge, Re-Pick





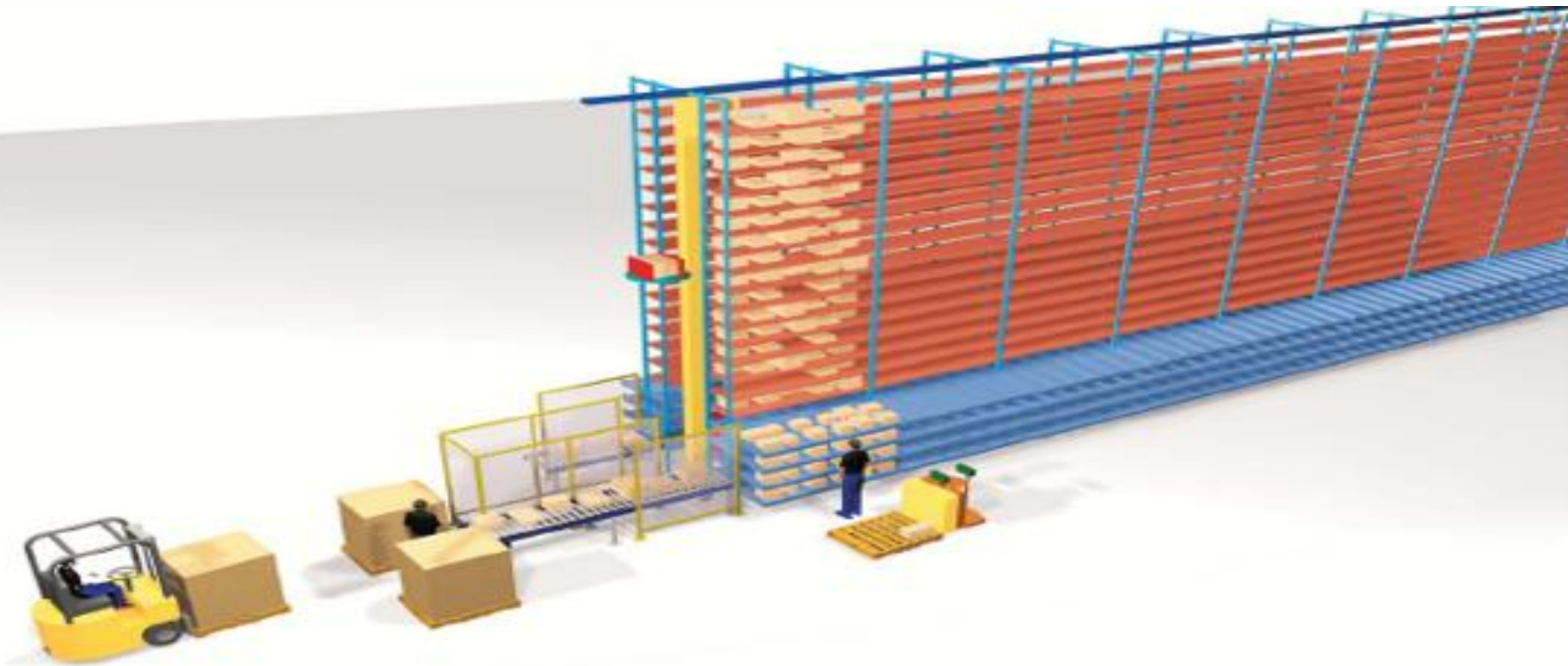
Revised Activity Profile: ambient

	SKUs	Mechanized % cases	% Cube	% lines
Floor	3,200	83	90	81
Active: 1,700/53%				
Mini-Crane	6,000	17	10	19
Active: 1,300/22%				

Mechanized Solution?
Dynamic Pick Line:
Slot only for one shift



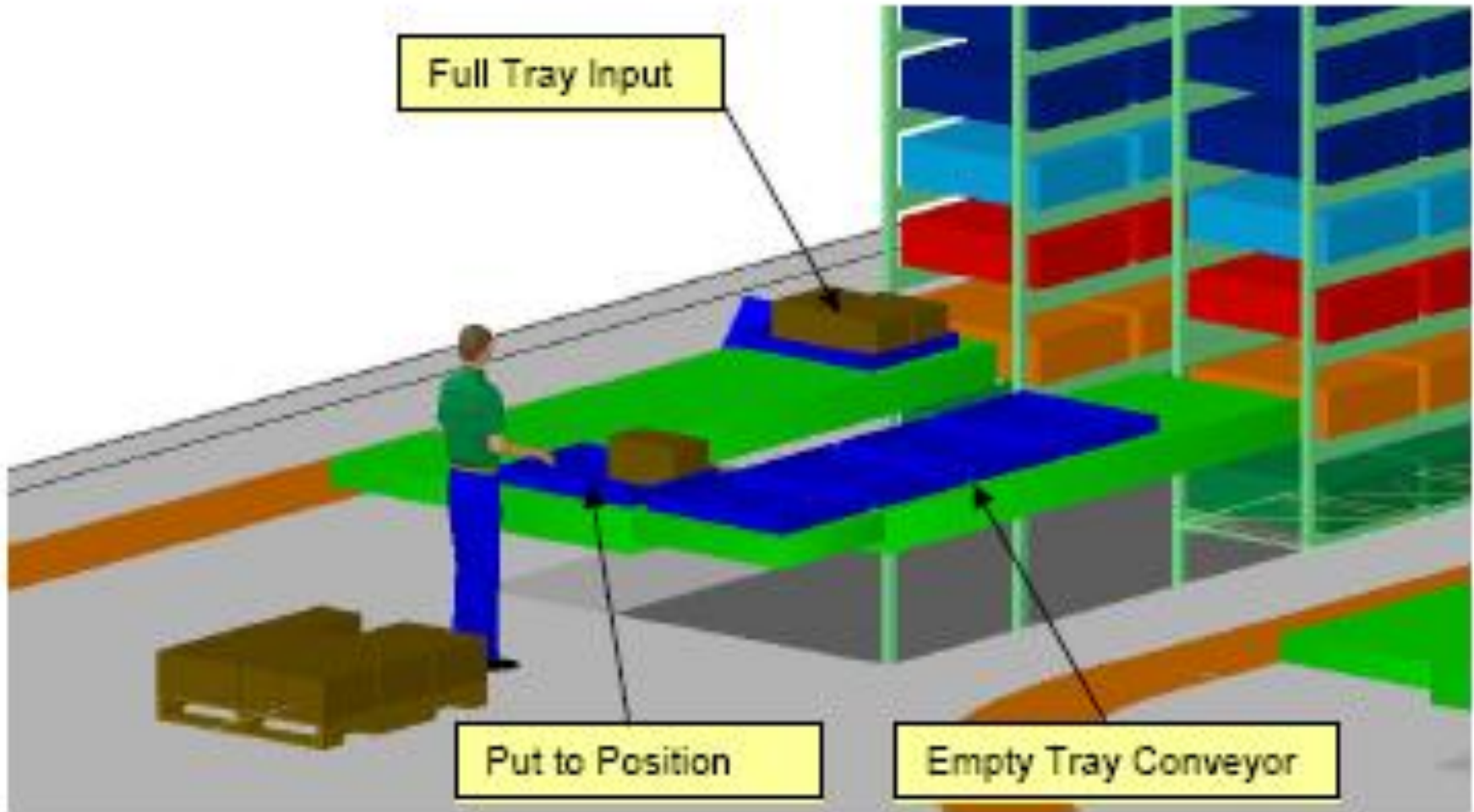
Mini-Load Module



Ground Level Pick and Merge



Mini-Crane Input



**“Decanting”
Dock to Stock
Picker ready**

Pay me now or pay me later



Mini-Crane: Dynamic Pick Line

■ Operating Strategy

- ✓ drop required trays to pick face
- ✓ based on shift or batch orders
- ✓ restock above: based on history
- ✓ maintain weight/stackability

■ Considerations

- ✓ set-up lead time
- ✓ load stability
- ✓ available slots and location



Dynamic Slotting: Benefits

Picking

- Reduced labor, eliminating merge and travel time

SKU Hit Density on Pick Line

- Higher than conventional racking solutions

Flexibility

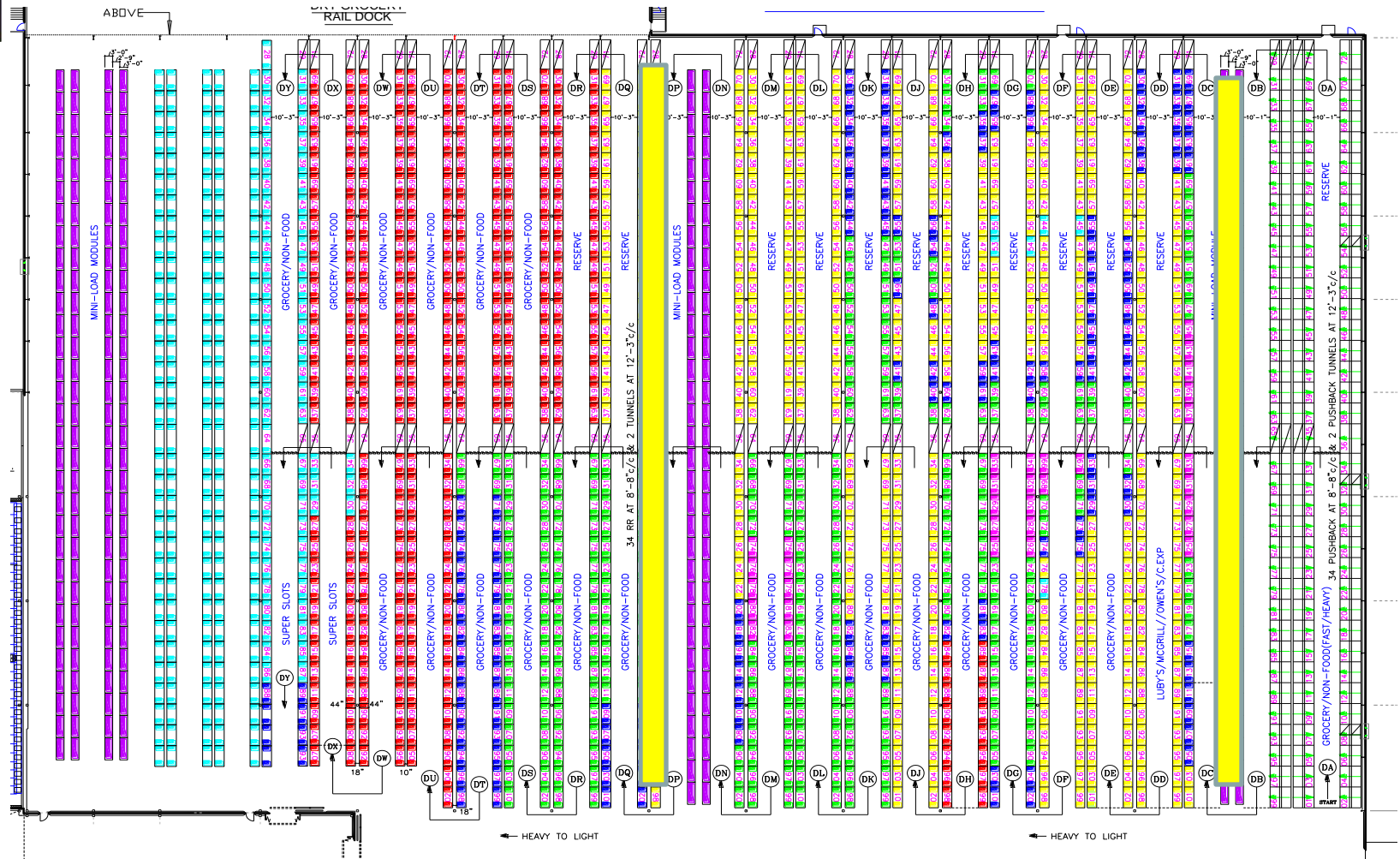
- Order driven system
- Dynamic slots
 - Recycle slot after pick
 - Can assign multiple tray-slots to SKU

Modularity

- Easily expandable



Embedded Mini-Crane + Conventional



Merging Eliminated /Ergonomics Improved
Load Building Sequence Maintained
Variety Growth facilitated



Embedded Mini Load

- **Integrate modules within conventional layout**
 - respect weight range/crushability
 - group product families
- ✓ **\$8mm investment**
- ✓ **enhanced ergonomics**
- ✓ **facilitates variety increase**
- ✓ **streamlined receiving**
- ✓ **picker merges all product**
- ✓ **reduced pick errors**
- ✓ **reduced dock delays**
- ✓ **reduced truck driver sort**
- ✓ **order-picker backup**
- ✓ **experience with automation**
- ✓ **best of both worlds**
- ✓ **can retro-fit other facilities**



The Bottom Line: capital \$ per SKU

Floor Pick

VNA

2 level pallet pick	\$23	\$103
6 wide handstack	\$12	\$92
4' deep case pushback	\$44	\$124
mini-crane (3,000 sku)		\$666

Where is the ROI?



One Man's Metrics

<u>SYSTEM</u>	<u>PICK LINE: Feet</u>
Conventional Pick Line	10,300
Conventional +VNA	6,800 + 4,200 VNA
Conventional + Mini	6,100 + 1,200 Mini

Picking is 60% travel
10,800 hours pick labor + 20,800 merge labor
\$451,000 annual
+ - 8.9 year payback



Mini-Crane Justification

- Faster dock to stock
- Picker ready splits
- Ground level pick and merge
- Shorter pick line; only active SKUs on floor
- Improved ergonomics
- Improved inventory rotation, management, accuracy
- Eliminate dock merge labor and loading delays
- Improve fill rate
- Add SKU within existing Brick and Mortar



Last Thought: Disaster Recovery





In Summary

- ✓ **Not all operations are created equal**
- ✓ **Slow movers system must address total needs**
 - order profiles
 - customer demands
 - faster load cycle
 - ergonomics
 - building constraints
 - later cutoff
 - increased productivity,
 - capital budget
 - ROI target
- ✓ **Not all slow movers are created equal**
 - splits
 - cube
 - order lines
 - cases
 - weight
 - order frequency
- ✓ **Storage and picking system must be flexible and accessible**



WHAT'S IN YOUR WAREHOUSE?



For More Information:

Speaker: ak@komintl.com

Home Page: **www.komintl.com**

Visit ProMat 2013 Booth 2781