

Six Steps to Optimizing Order Fulfillment

Sponsored by:

kardexremstar

Presented by:

Brian Baker

Regional Business
Director



Today's session

- Classify Inventory
- Match Inventory to Storage Technology
- Slot Inventory within the Storage Technology
- Map Processes and Workflow to Maximize Throughput and Reduce Labor
- Integrate Business Systems to Maximize Visibility
- Add Automation to Reduce Cost

1. Classify Inventory

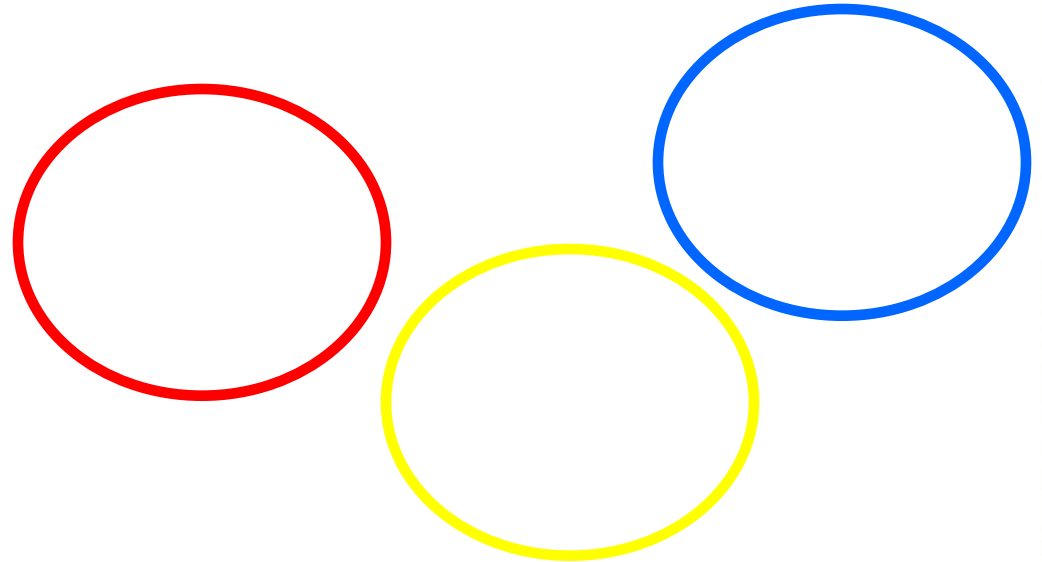
- Classify Your Inventory Into Categories Based On Picking Size (Pallet, Case, Piece) And Velocity (Fast, Medium, Slow)

Categorize Your Inventory

- Categorize Your Inventory By:
 - Size
 - Pick Velocity
 - Pick Count
 - Weight



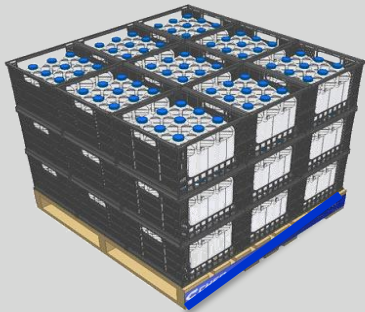
Whatever Makes Sense
For Your Operation!



Determine Storage Method

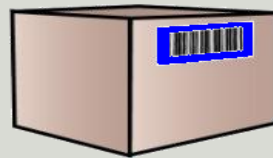
Pallet Picking

- Pallet Rack
- Bulk Storage



Case Picking

- Flow Rack
- Conveyor
- Horizontal & Vertical Carousels
- Rack & Shelving



Broken Case Picking

- Flow Rack
- Horizontal & Vertical Carousels
- Vertical Lift Modules
- Rack & Shelving



Analyze Your Inventory

Pallets

Part Number	Part Hit Per Month
	Pallet Rack
	Bulk Storage

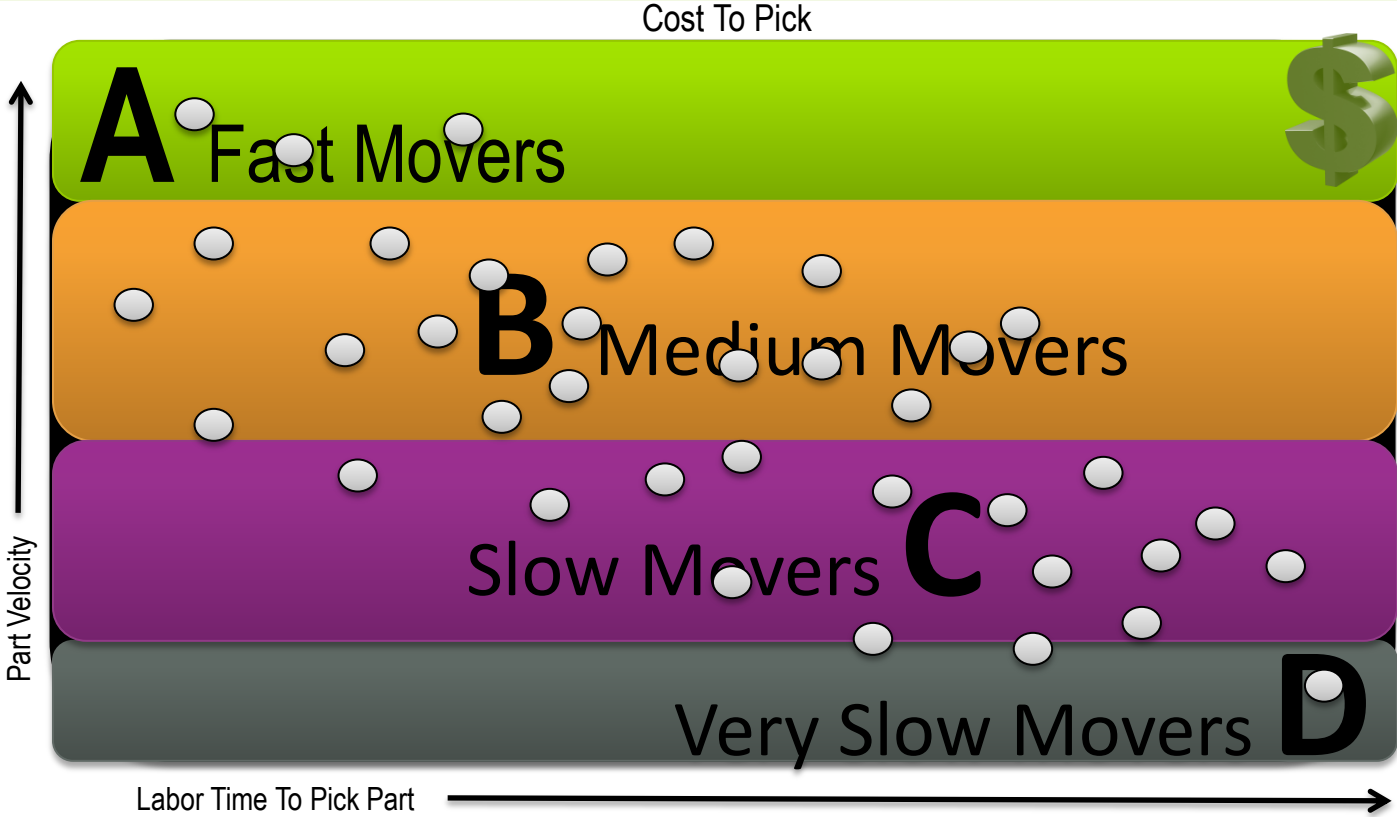
Cases

Part Number	Part Hit Per Month
	Flow Rack
	Horizontal Carousels
	Rack & Shelving

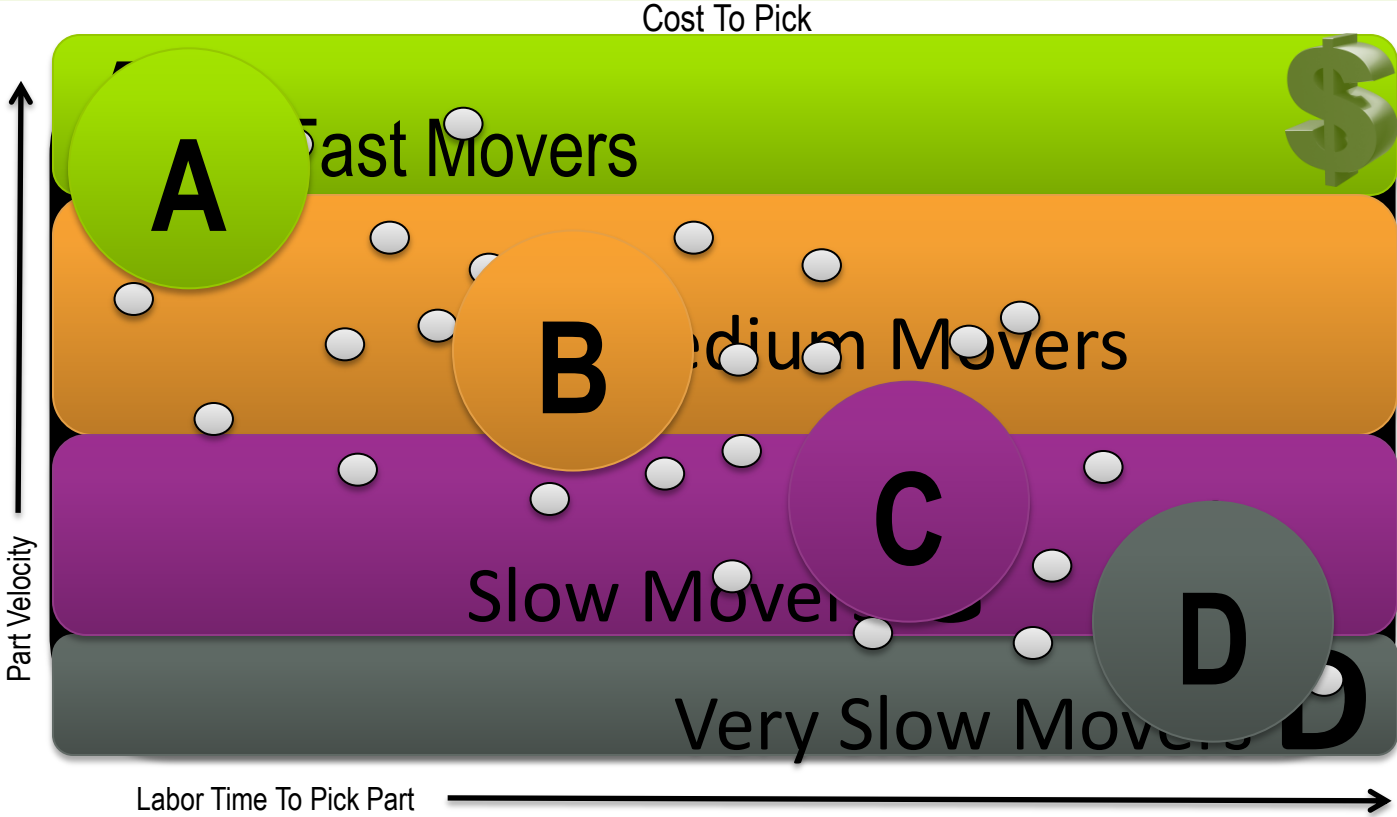
Broken Case Eaches

Part Number	Part Hit Per Month
	Flow Rack
	Horizontal & Vertical Carousels
	Vertical Lift Modules
	Rack & Shelving

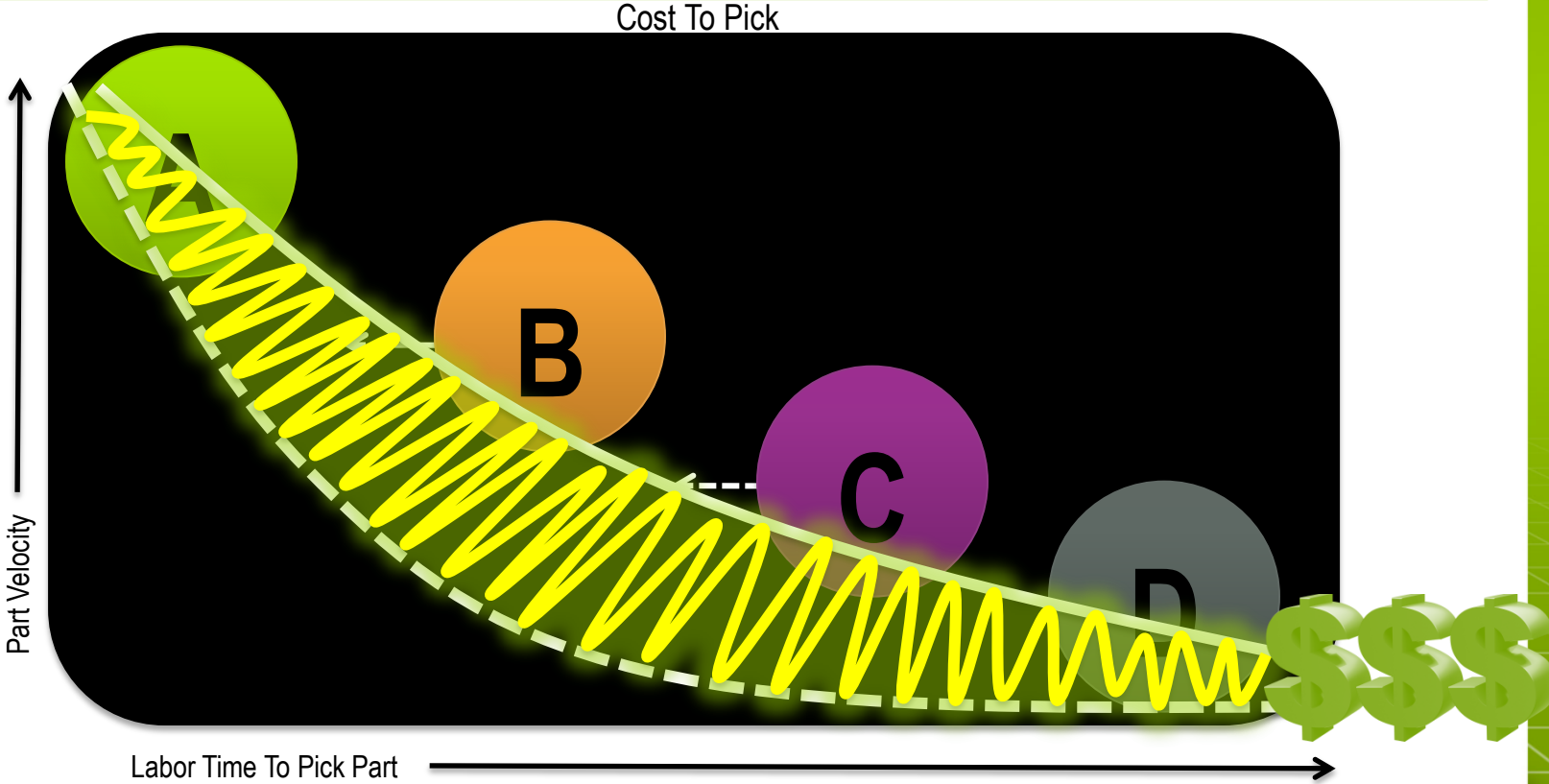
Plot Part Attributes



Group Parts Together

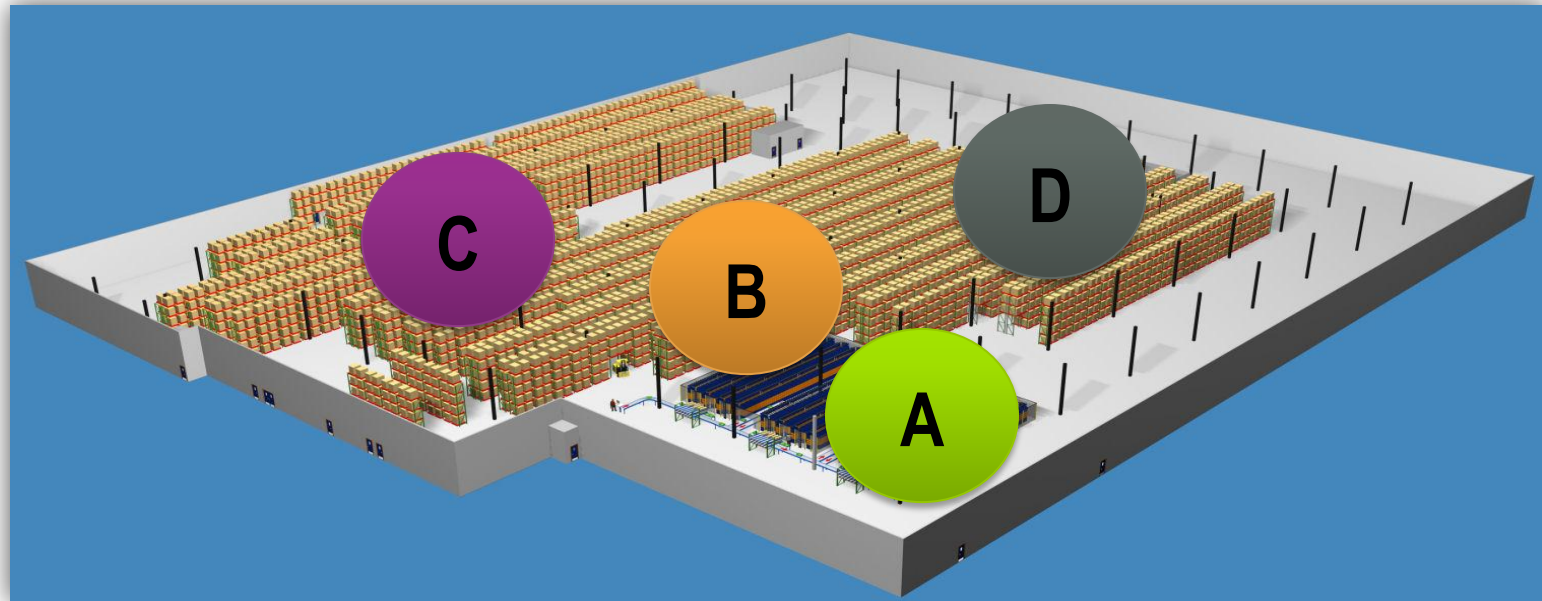


Move Towards Improvement



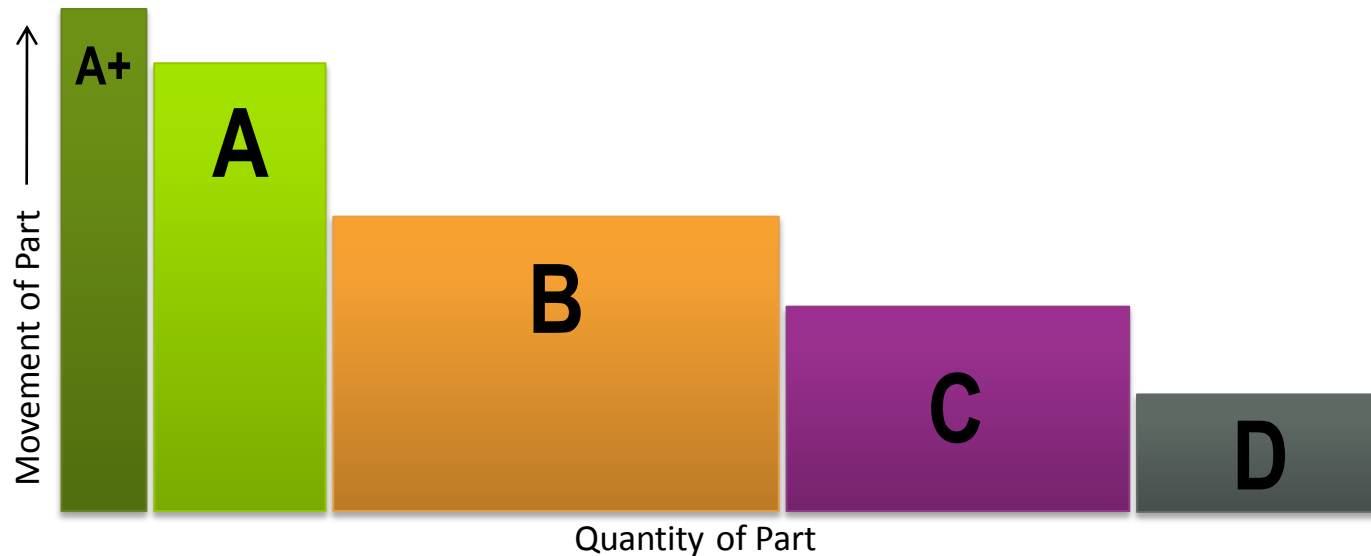
Pareto Principle (80/20 Rule)

- 80% Of Business Comes From 20% Of Inventory
- What About The Other 80% Of Your Inventory?



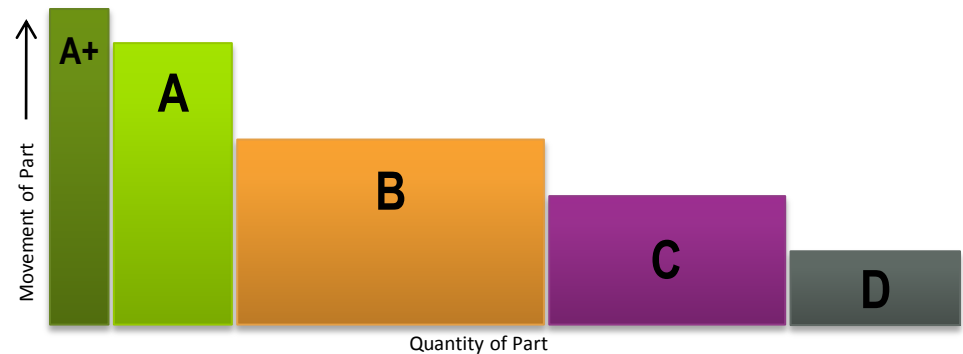
Analyze Your Part Categories

- Companies Focus Their Attention On Fast Movers (A)
- Ignoring Slow (C) & Medium (B) Movers- The Largest Part



Medium & Slow Movers

- Look Closer At Slow & Medium Movers
 - How Much Floor Space Do They Require?
 - How Much Labor Do They Require?
- How Can You Make Your Largest Quantity of Inventory More Efficient?



2. Match Inventory Classifications to Storage Technologies

- Match Your Inventory Categories And Classifications To The Best Storage Technologies

Types of Material Handling

Rack & Shelving



Drawer Systems



Pick Modules



Most Operations
Require Multiple
Storage Mediums
To Effectively
Store Parts

Horizontal
Carousels



Vertical
Carousels



Vertical Lift
Modules



Prioritize Your Benefits

Accuracy • Inventory Control • Space • Throughput • Productivity/Labor • Ergonomics

Fast Movers
Throughput
Space
Productivity/Labor
Accuracy
Inventory Control
Ergonomics

Medium & Slow Movers
Space
Productivity/Labor
Throughput
Accuracy
Inventory Control
Ergonomics

Very Slow Movers
Ergonomics
Accuracy
Productivity/Labor
Inventory Control
Space
Throughput

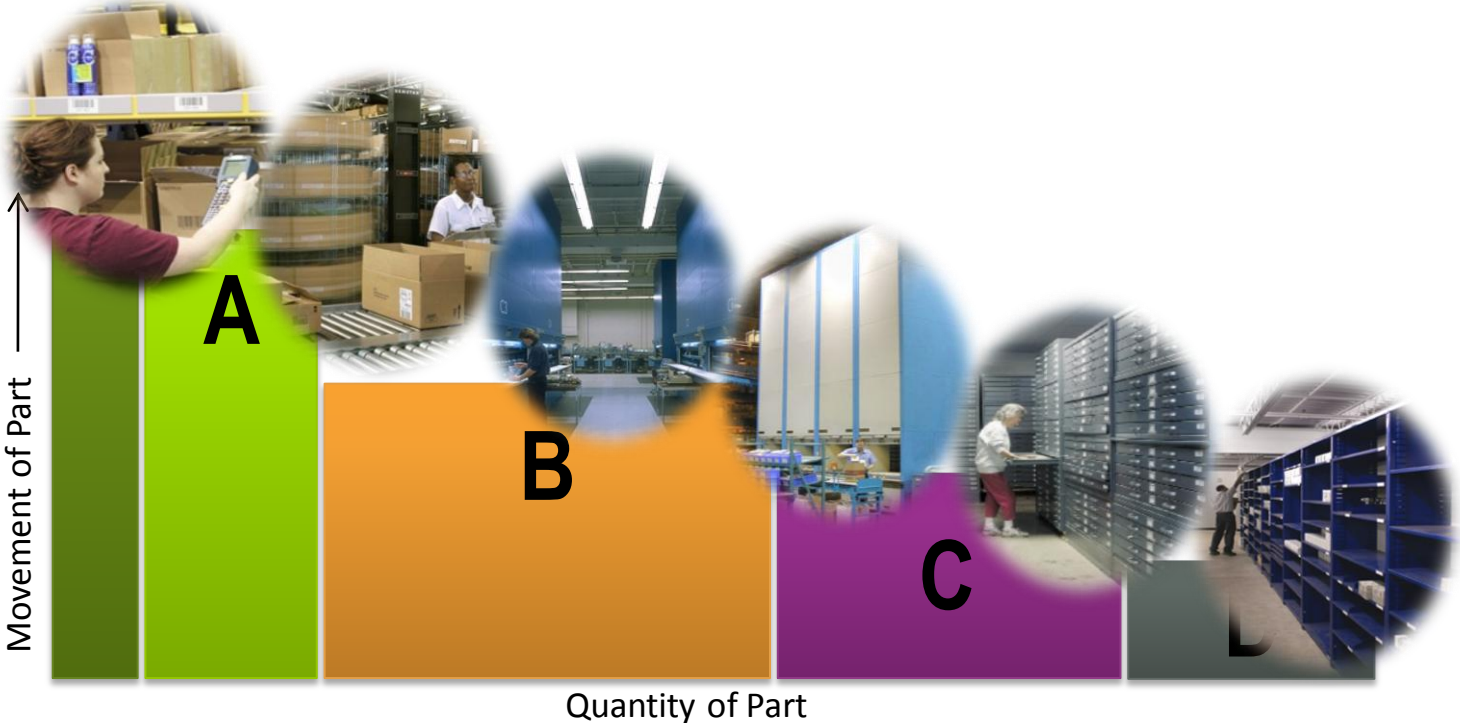
Select The Best Technology

Rankings: 5=Best, 3=Better, 1=Good

Features	VLM	Vertical Carousel	Horizontal Carousel	Shelving
Space Footprint	5	5	4	1
Throughput	4	3	5	1
Productivity	4	3	5	1
Accuracy	5	4	5	2
Control	4	4	3	1
Ergonomics	5	5	4	1
Expandability	4	2	4	5

Parts Need Different Storage

- Inventory Categories Require Different Storage Methods



3. Slot Inventory Within The Storage Technology

- Slot Your Warehouse For Maximum Efficiencies And Storage Capacity

How To Use Slotting

- Slotting Is a Lot Of Work
 - Set Slotting Goals
 - Collect Data
 - Analyze Your Inventory Data
 - Categorize Your Inventory
 - Create a Slotting Plan

Slotting Goals

- Most Common Slotting Goal Is To Reduce Travel Time To Increase Productivity
- Slotting That Is Based On Only One Criteria May Improve That Specific Criteria, But At A Cost
 - Increased Congestion
 - Location Size
 - Longer Replenishment Time
 - Worker Injury

Set Slotting Goals

Improve Space Utilization

Minimize Handling of Parts

Increase Productivity

Balance Work Flow

Improve Inventory & Accuracy

Better Worker Ergonomics

Minimize Travel Time To Product

Reduce Search Time

Prioritize Your Slotting Goals

Improve Space Utilization

Minimize Handling of Parts

Increase Productivity

Balance Work Flow

Improve Inventory & Accuracy

Better Worker Ergonomics

Minimize Travel Time To Product

Reduce Search Time

Slotting Goals

- Be Sure To Consider Your Constraints
 - Location Capacity
 - Product Size
 - Product Weight
 - Product Groupings/Kitting
 - How The Product Is Accessed (Forktruck, Scissor Lift, Etc)

Collect Inventory Data

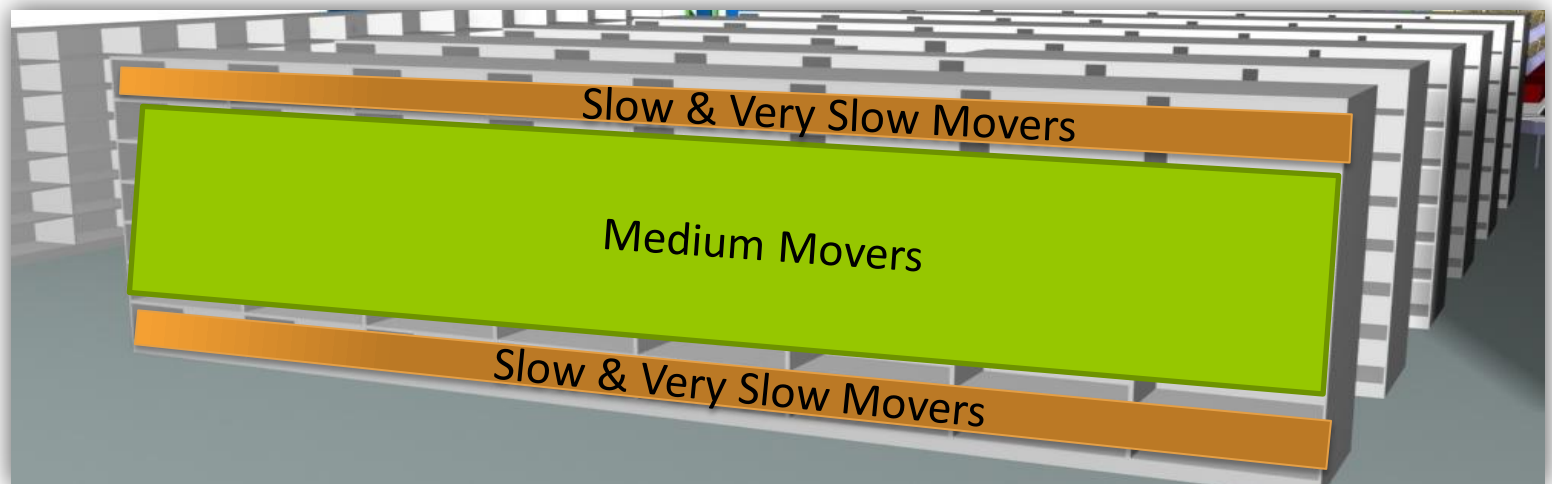
- Part Numbers & Descriptions
- Sizes & Weights
- Stock Quantity, Reorder Point & Reorder Quantity
- Part Quantity (Number Of Parts Picked Per Pick)
- Part Hit (Number Of Times A Product Is Picked)
- Parts That Are Used Together Frequently
- How Is The Part Picked
 - Pallets, Cases, Broken Case Eaches

Good Data = Good Results

- Collecting Good Data Is The Largest Challenge
- Ideally, Capture up to a Year of Data
 - Seasonality
 - Average Inventory Growth

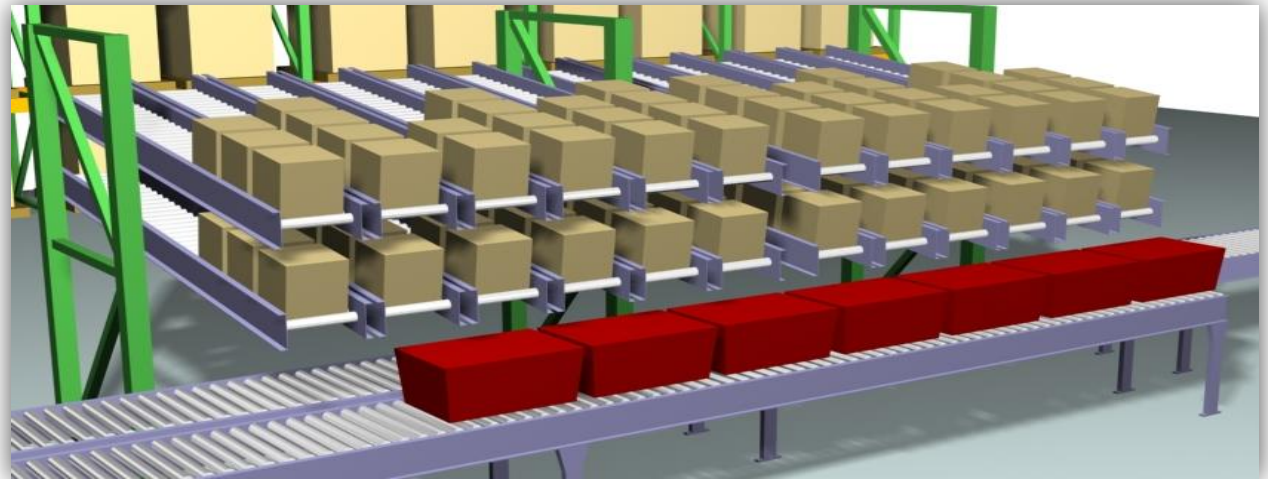
Create A Slotting Plan

- Make a Plan to Slot Each SKU In The Proper Equipment Based on Movement
 - Faster Movers Most Accessible Location
 - Slower Movers Least Accessible Locations



Consider Your Constraints

- Location Capacity
 - Will The Quantity Fit Into One Lane? Do You Need Two?
- Product Weight
 - Will The Equipment Hold The Weight Of The Product?



Consider Your Constraints

- Product Size
 - Will The Product Physically Fit Into The Equipment?
- Product Groupings/Kitting
 - Slot Frequently Picked Products Close Together

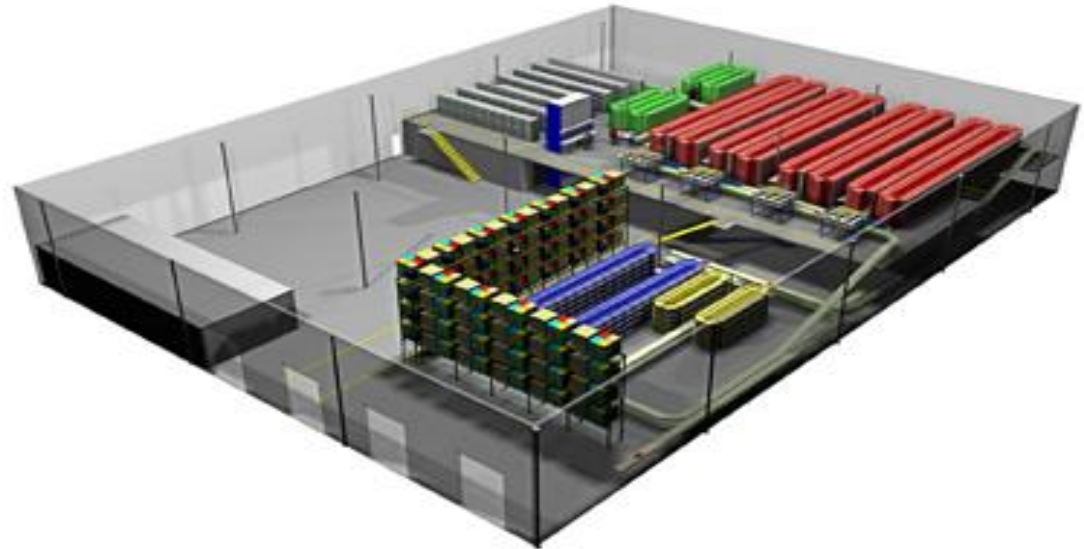


4. Map Workflow to Maximize Throughput & Reduce Labor

- Map Your Business Processes And Order Workflows To Maximize Throughput And Reduce Labor Costs

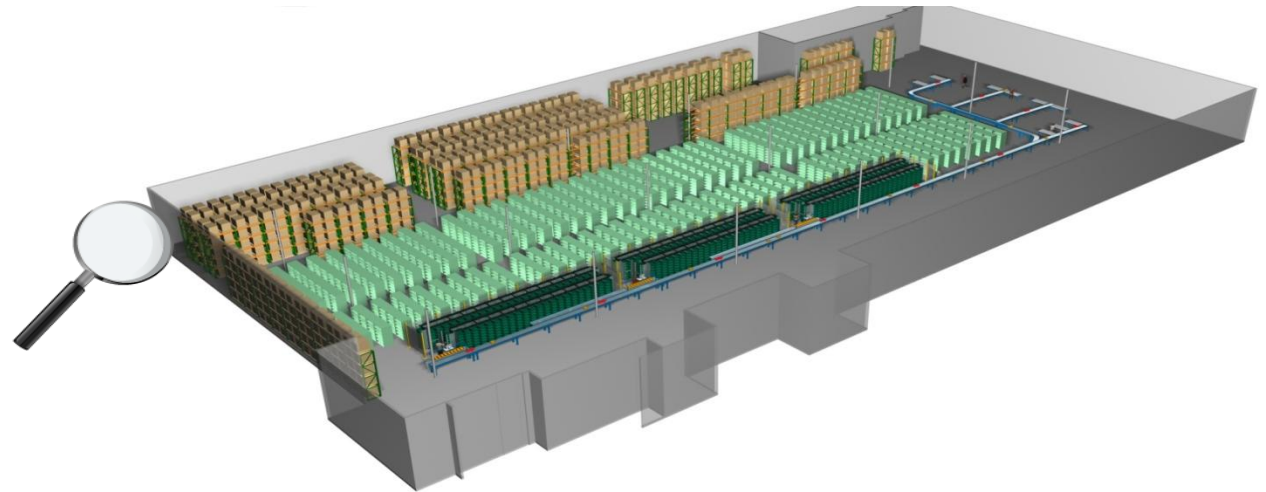
Balance Work Flow

- Slot Parts To Ensure Optimum Work Flow
- Eliminate Bottle Necks
- Maximize Dead Zones



Bring Work to Worker

- Look For Places in The Warehouse Where The Worker Must Travel To The Work
- These Are Areas That Can Be Improved With Slotting
- Proper Slotting Brings The Work To The Worker



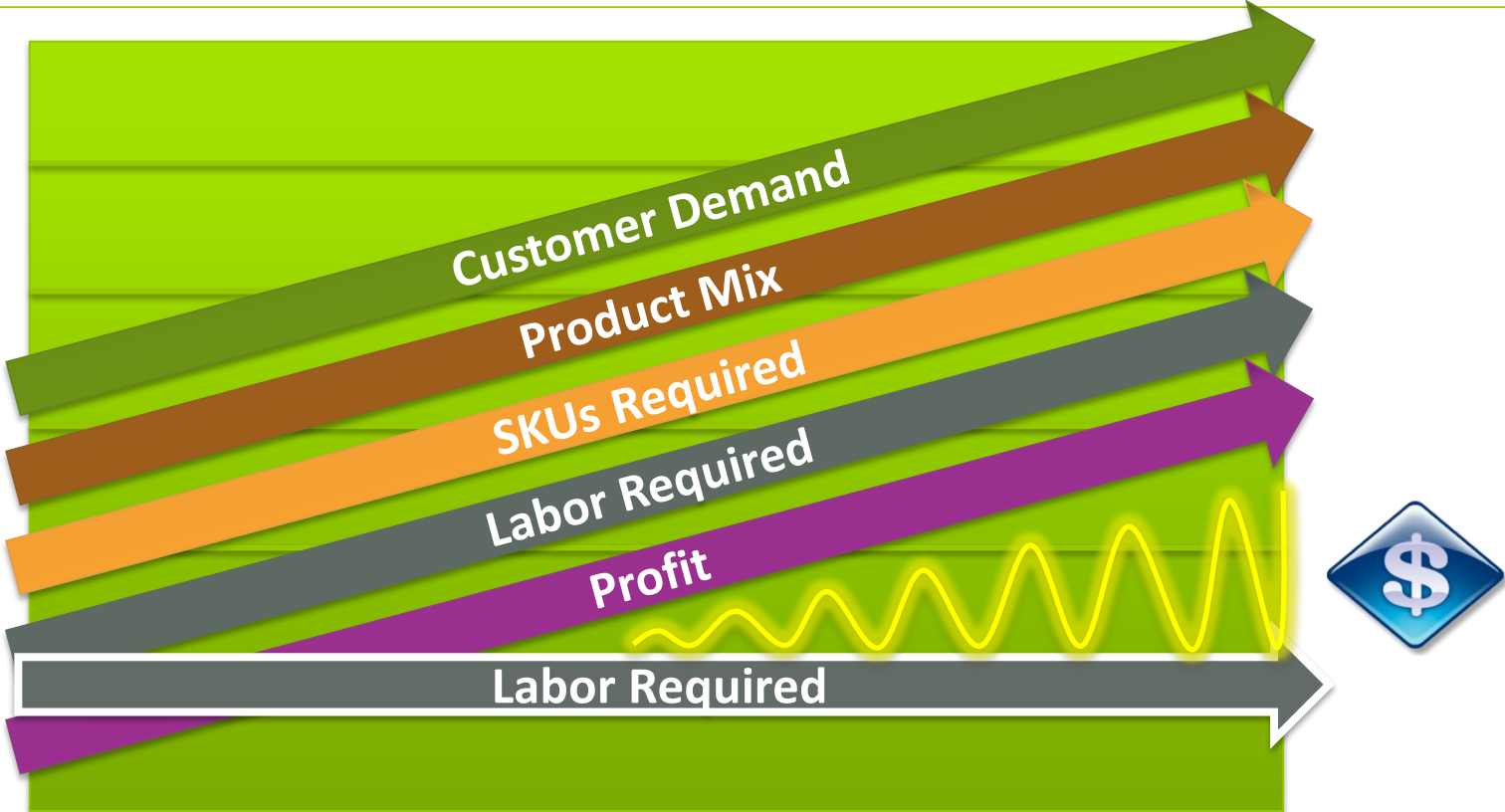
5. Integrate Business Systems to Maximize Visibility

- Integrate Business Systems To Reduce Paper, Extend Order Cut-off Times And Maximize Visibility To Key Business Owners

6. Add Automation to Reduce Costs

- Reduce Labor Costs By Adding Automation

When To Automate



Why Automate?

PRODUCTIVITY

Increase Productivity
up to 600% & Save
Labor Cost

SPACE

Save up to 30% to
65% Square Feet of
Floor Space

THROUGHPUT

Improve Order
Turnover & Lengthen
Order Cut Off Times

ACCURACY

Reduce Errors with
up to 99% Picking
Accuracy

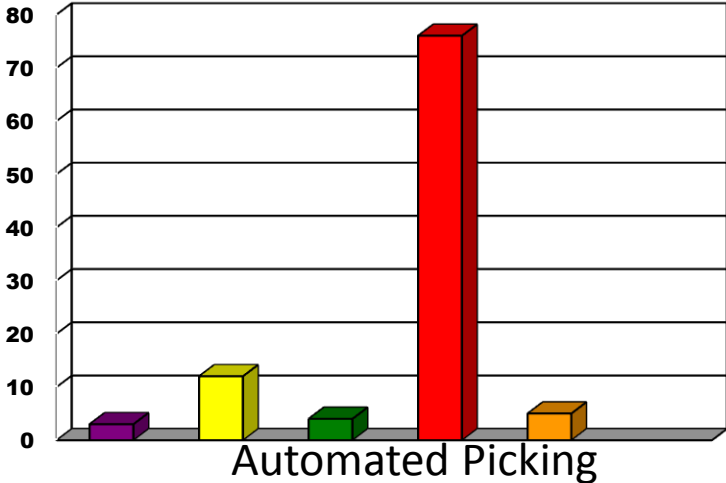
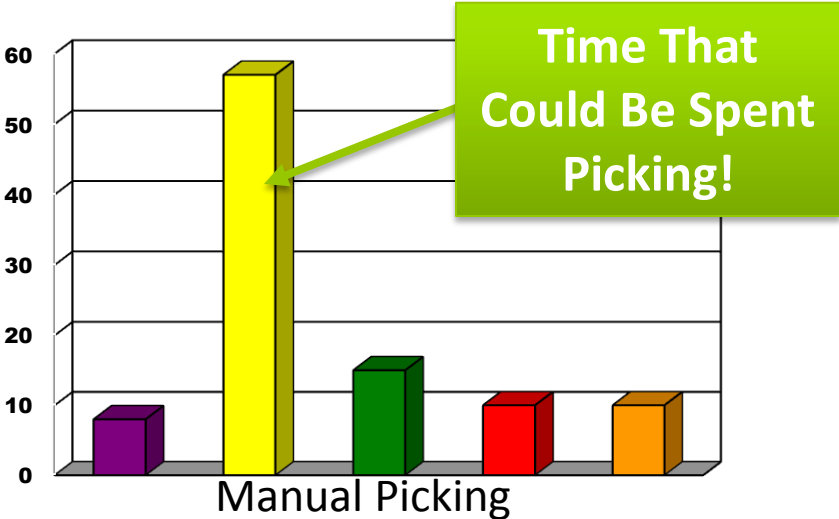
CONTROL

Improve Inventory &
Location Control

ERGONOMICS

Significantly Reduce
Bending & Reaching

Increased Productivity



- Receive Instructions
- Travel
- Locate & Recognize

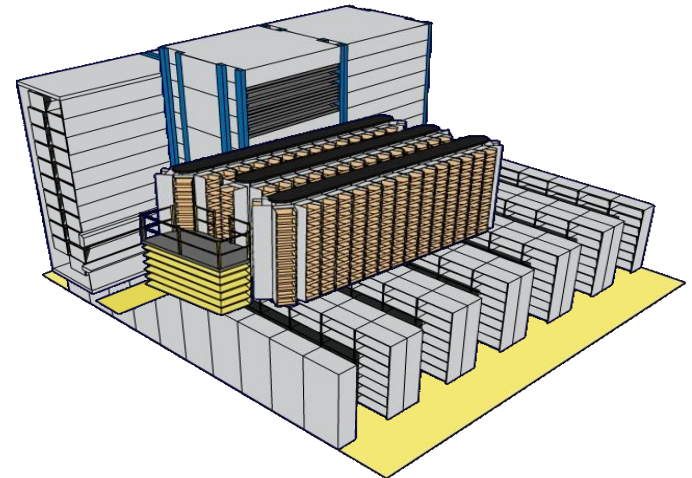
- Pick
- Wait, Mark & Dispose

Low Risk Productivity

Low Risk Technology	Bag & Tag (lines per hour)	Pick & Toss (lines per hour)
Shelving	10 – 35	30 – 75
Drawers	10 – 35	30 – 50
Flow Rack	25 – 45	75 – 150
Pick To Light Rack	35 – 60	95 - 200
Horizontal Carousels	75 - 200	225 – 750
Vertical Carousels	50 – 175	150 – 225
Vertical Lift Modules	50 - 150	125 - 175

Improve Space Utilization

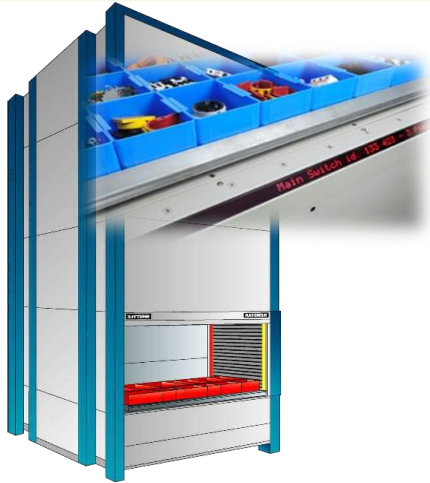
- Match the Part Size to the Location Size
- Use the Right Storage Medium
- Store Parts in Pick Quantities That Make Sense
 - Eaches
 - Cases
 - Pallets
 - Kits
 - Interpaks
 - Combinations of Above



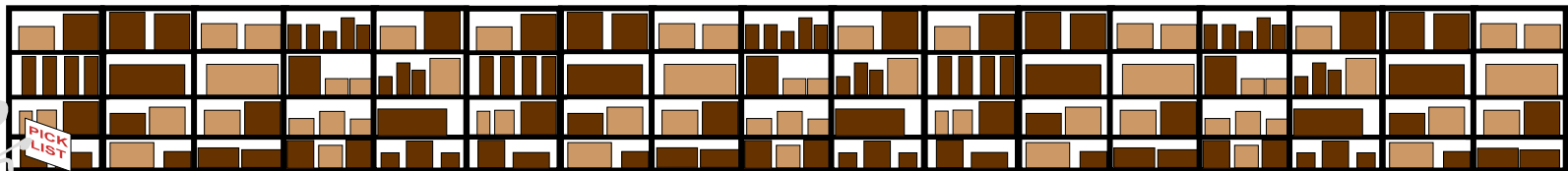
Storage Types & “Net Cube”

Technology	Wasted Unit Space	Wasted Vertical Height (Based on 20' Ceiling)
Shelving	50 - 70%	70%
Drawers	40 - 60%	80%
Flow Rack	60%	70%
PTL Rack	60%	70%
Horizontal Carousel	25%	30%
Vertical Carousel	20%	10%
VLM	10%	10%

Increased Picking Accuracy



Use Light Directed Picking to Reduce Picking Errors



Increased Picking Accuracy

- Increase Picking Accuracy Up To 99.9%
 - Eliminate Costly Wrong Picks
 - Increase Customer Satisfaction
- Reduce Product Shrinkage
- Reduce On Hand Inventory
- Reduced Cycle Counting / Auditing Costs



Picking Accuracy Costs Money

- A 1% Error Rate Can Eat Your Profits:
 - Figure 250 Lines Per Hour
 - 3 SKUs Per Order
 - Eight Hours Per Shift
 - One Shift Per Day
 - Equals 6,000 Picked Items
 - 1% Equals 60 Wrong Picks
 - @ \$100 Cost Per Wrong Shipment

\$6,000 Per Day!!!!!!!



Manual Picking and Ergonomics



Reaching

Lifting

Bending

Automated Picking and Ergonomics

Reduce or Eliminate Ergonomic Issues

- Reduce Lifting Requirements
- Reduce Back Injuries
- Eliminate the Need for Ladders
- Help Avoid the Average \$100,000 Claim
- Reduce Fatigue from Walking



Create Ergonomic
Pick Zones Using
Software Control



Real World Case Studies

Mazak

- Application
 - Spare Parts Distribution To End Users
- Equipment
 - 17 VLMs Grouped In 4 Pick & Pass Workstations Integrated With Picking Software
- Benefits
 - Increased Productivity by 80%
 - Reduced Labor Requirements By 44%
 - Increased On Hand Part Inventory By 95%



American Crane & Tractor Company

- Application
 - Distribution of Aftermarket Crane & Tractor Parts
- Equipment
 - Two Pods Of Three Horizontal Carousels, Stacked with Picking Software & Pick-to-Light
- Benefits
 - Doubled Efficiencies
 - Increased Picking Accuracy
 - Improved Customer Order Turn Around Time



Mark Andy

- Application
 - Point of Use Storage for Manufacturing Parts
- Equipment
 - Two Horizontal Carousels and Three VLMs Integrated with picking software
- Benefits
 - Reclaimed 1,600 sq ft to Expand Production
 - Increased Parts Inventory by 40%
 - Maintained Productivity & Accuracy Rates



For More Information:

Brian Baker

Email: brian.baker@kardexremstar.com

www.kardexremstar.com

Visit Us At Booth #3623