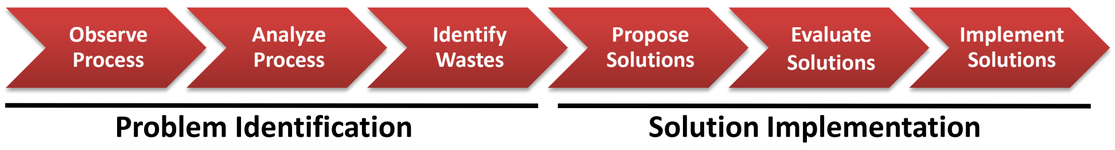
Improve Warehouse Operations by Lean Manufacturing

Objective

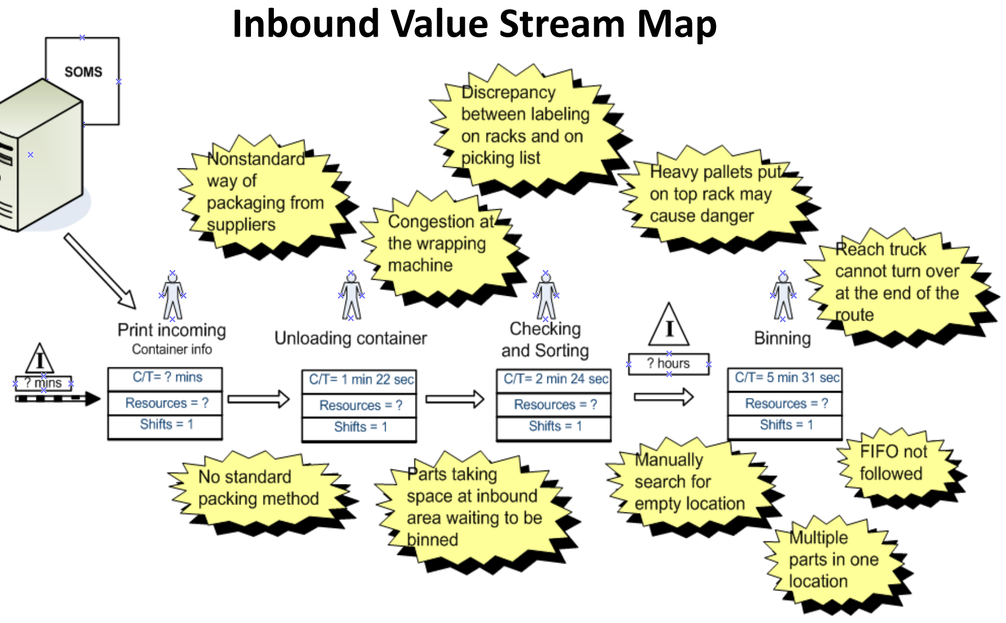
- Evaluate current performance of warehouse operations
- Identify wastes in current warehouse operations
- Propose and implement solutions to improve efficiency

Methodology

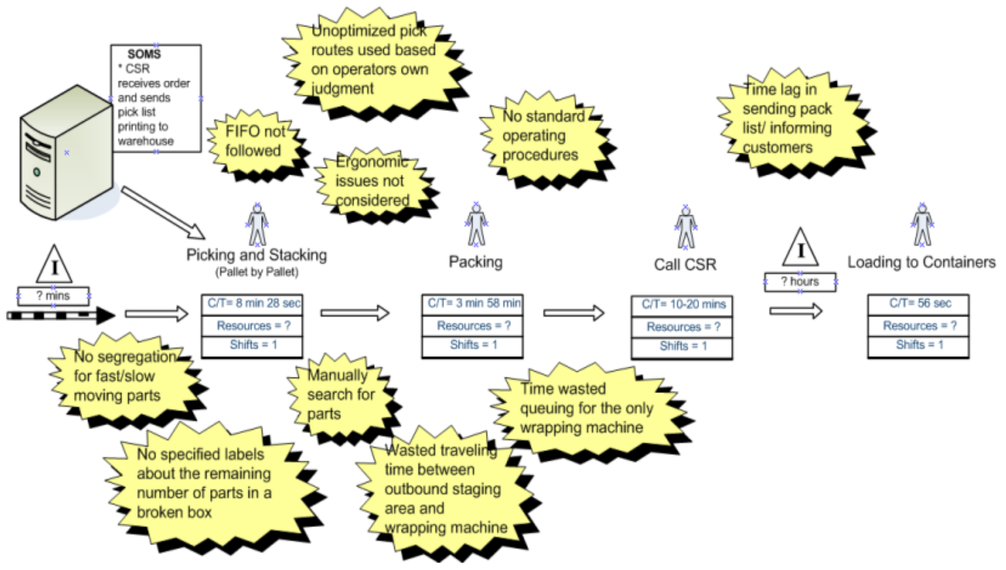


Problem Identification

Inbound Value Stream Map



Outbound Value Stream Map



Solution Implementation

Segregate Fast and Slow Moving Parts

■Problem Statement

Fast and slow parts are mixed up in the warehouse, leading to wasted traveling time

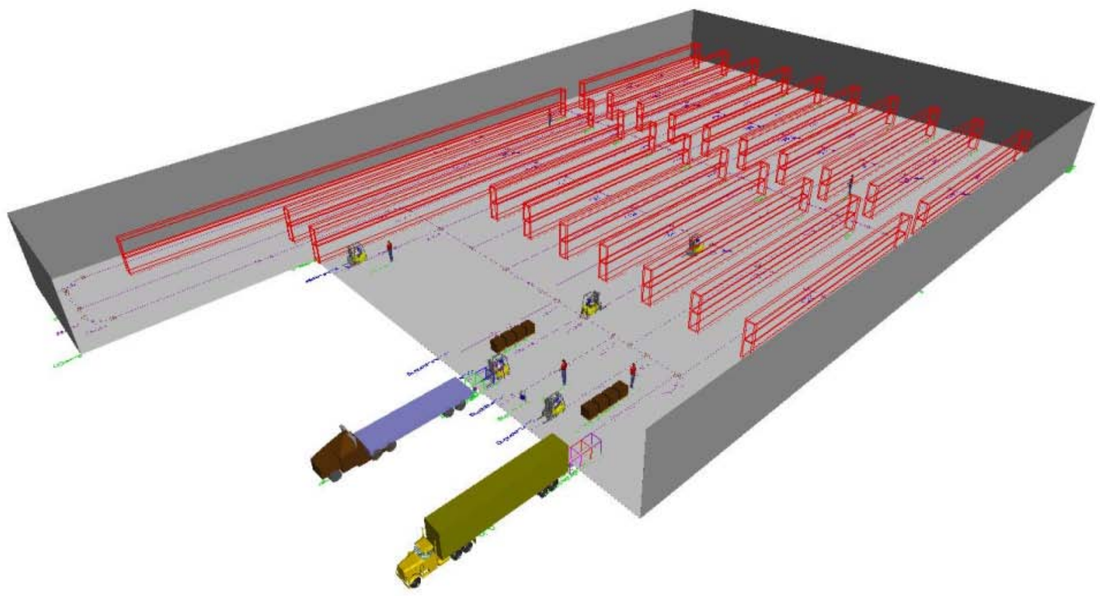
■Proposed Solution

Segregate fast and slow moving parts

■Methodology

Build a simulation model by AutoMod which represents the actual warehouse and analyze cycle time per pallet before and after change

■Simulation Model

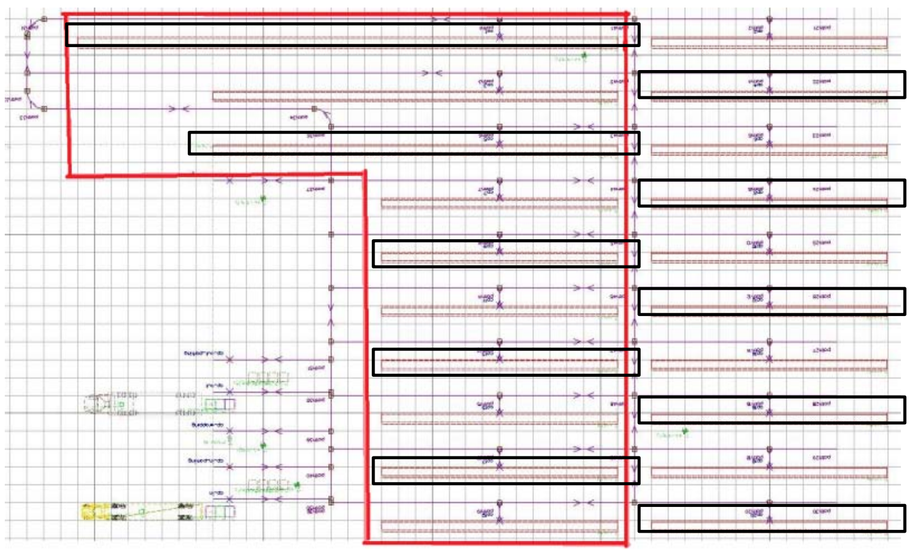


■Segregation Plans

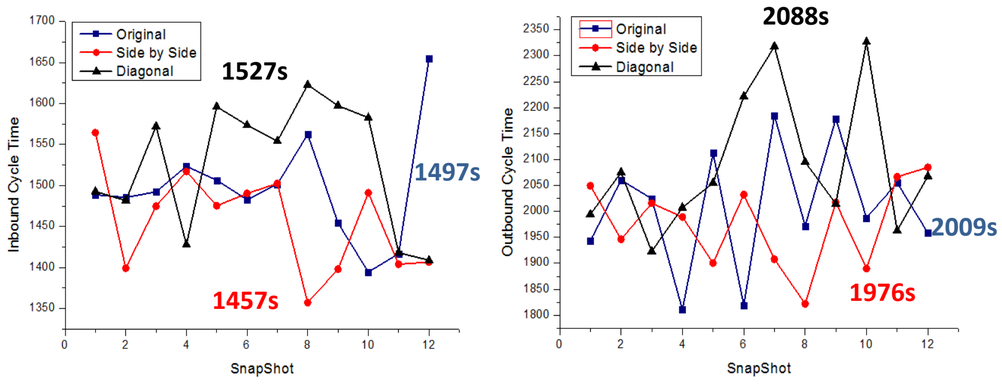
Original Segregation: random

Side by Side Segregation: Fast moving parts are in racks in red block

Diagonal Segregation: Fast moving parts are in racks in black block



■Comparison of Three Segregation Plans



■Conclusion: Best Segregation Plan-Side by Side

Resolve Ergonomic Issues

■Problem Statement

-Improper use of human body leading to back injury

-Measuring height of pallet by eye leading to improper stacked height of pallet

■Proposed Solution

-Equipping workers with waist supporting belt

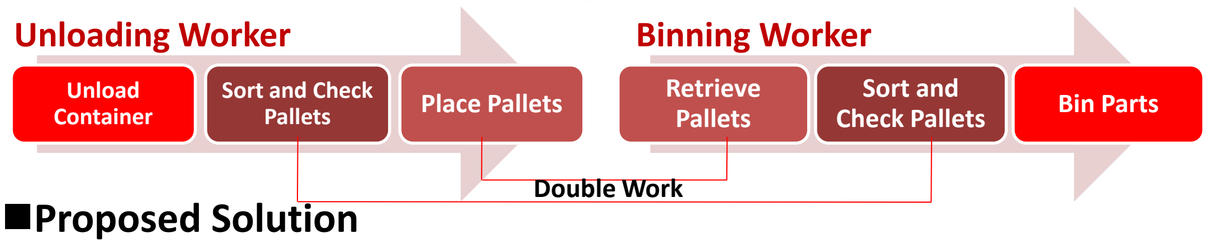
-Instruct workers with safe moving method

-Introduce height indicator

Refine Work Procedure

■Problem Statement

Double work by unloading and binning workers



■Proposed Solution

Implement unload-sort-bin cooperating work flow

■Improvement

Reduce cycle time from 615 seconds to 492 seconds, by 20%

Design Standard Operating Procedure

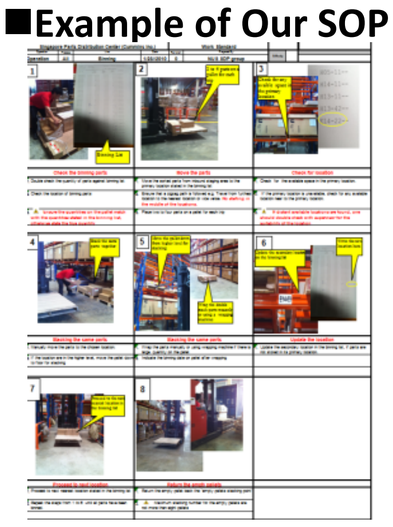
■Problem Statement

No standard operating procedures for workers to follow, leading to low work efficiency

■Proposed Solution

Design standard operating procedures for warehouse processes

■Example of Our SOP



Conduct Time and Motion Study for Performance Evaluation

■Problem Statement

No standard for evaluating workers' hourly performance

■Proposed Solution

Conduct Time and Motion Study to set standard time for each process

■Result of the Study

Inbound Process		Outbound Process	
Process	Standard Time	Process	Standard Time
Unloading	0:01:22	Picking and Stacking	0.0058804
Checking and Sorting	0:02:15	Packing	0.0027529
Binning	0:05:23	Loading	0.0006486

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