

# Parts Marketplaces and Parts Presentation Module 9.2

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*These materials were developed as part of MIT's ESD.60 course on "Lean/Six Sigma Systems." In some cases, the materials were produced by the lead instructor, Joel Cutcher-Gershenfeld, and in some cases by student teams working with LFM alumni/ae. Where the materials were developed by student teams, additional inputs from the faculty and from the technical instructor, Chris Musso, are reflected in some of the text or in an appendix*

# Overview

## ➤ Learning Objectives

- Relate Kanban process to general context of parts marketplaces
- Understand benefits of effective use of parts marketplaces
- Highlight the impact improved parts presentation can have of on operational performance

## ➤ Session Design (15-20 min.)

- **Part I:** *Introduction and Learning Objectives (1-2 min.)*
- **Part II:** *Key Concept or Principle Defined and Explained (4-6 min.)*
- **Part III:** *Exercise or Activity Based on Field Data that Illustrates the Concept or Principle (3-4 min.)*
- **Part IV:** *Common “Disconnects,” Relevant Measures of Success, and Potential Action Assignment(s) to Apply Lessons Learned (3-4 min.)*
- **Part V:** *Evaluation and Concluding Comments (1-2 min.)*

# Key Concepts: Parts Marketplace

- What is a parts marketplace?
  - Localized material staging designed to facilitate value-added work and reduce inventory levels
- What are some of the key components of a parts marketplace?
  - Proximity to operator workstation
  - Reduced storage space
  - Less need for motorized conveyance to transport inventory to workstation
  - Frequent replenishment of localized inventories
- How does Kanban relate to a parts marketplace?
  - Kanban is a system of inventory management that facilitates a parts marketplace

# Parts Marketplace in Action



- **High** volume of parts per storage unit
- **Stationary** Storage - Mechanized movement required for delivery to production line

- **Low** volume of parts per storage unit requiring frequent replenishment
- **Movable Storage** – Wheeled parts bins enables transport to line and multiple pick-points

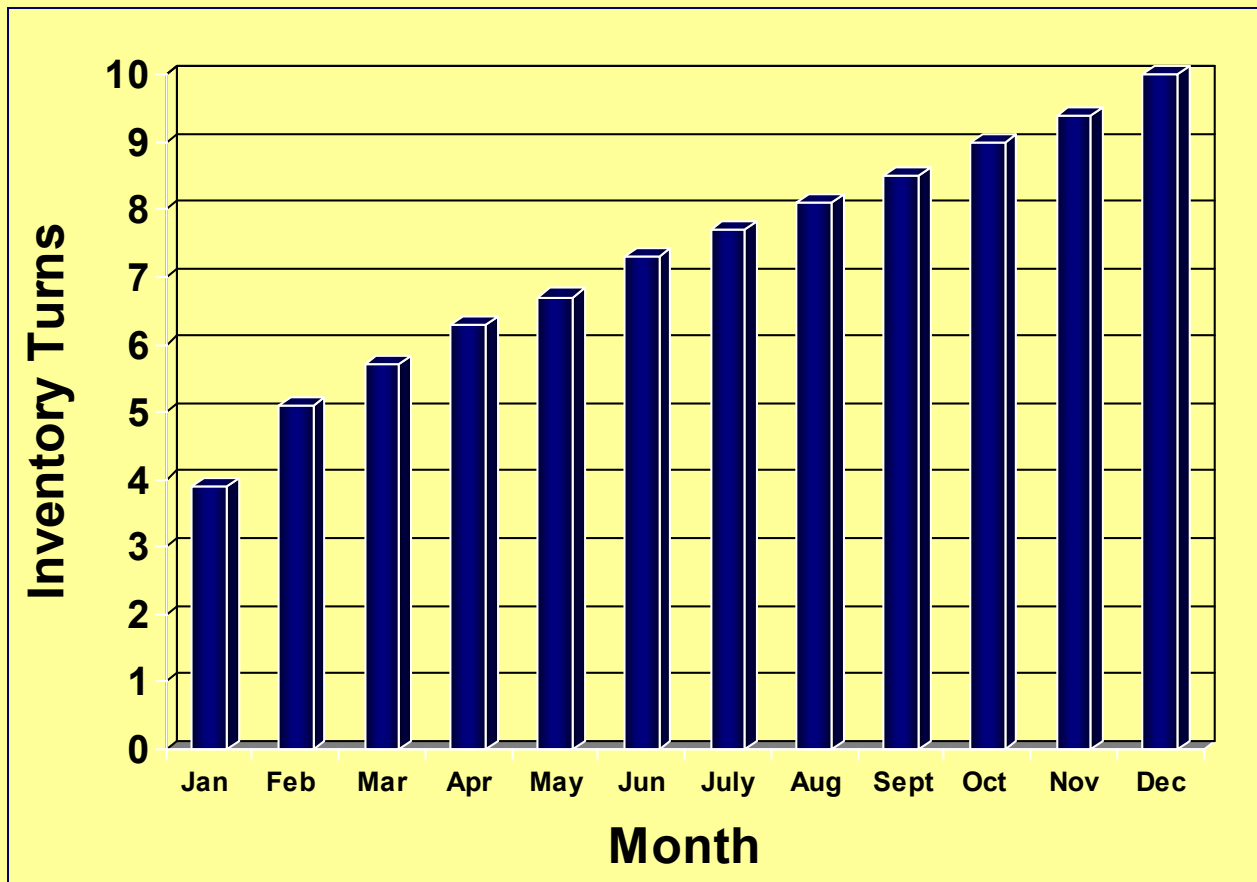
# Example of Marketplace at Visteon

- “Visteon has developed marketplaces to hold parts for upstream operations. A marketplace is like a general store where **personnel get their screws or other components instead of walking down the line to get them out of a bucket.** With a marketplace, **lift trucks are no longer needed.** In the old inventory system, workers had to keep a certain amount of raw material in a buffer at all time. Lift trucks were used to move parts around, and they created an **unsafe environment.** Using the lean philosophy, these **inventories are timed to shrink.** So instead of having weeks worth of screws at the general store, there are **only two hours worth.** Instead of using a lift truck to deliver a pallet of screws to the line, someone with a cart delivers a box every two hours.<sup>1</sup>”

# Benefits of Parts Marketplaces

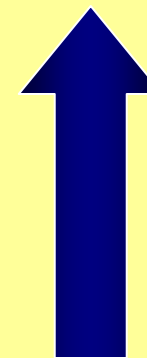
- What are some of the benefits associated with the implementation of parts marketplaces?
  - Increased value-added work
  - Reduced inventory
  - In the example of one metal fabrication company, 7% of inventoried material was scrapped and more than 50% was returned to suppliers to manage
  - Ability to manage by exception...visual cues indicate need to parts replenishment

# Financial Impact of Parts Marketplaces

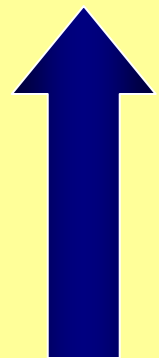


$$\text{Inventory Turns} = \frac{\text{COGS}}{\text{Avg. Inventory}}$$

Inventory  
Turns



Cash



***An Iterative Approach: Days of On-Hand Inventory  
Decrease over Time...Improving Cash Position***



# Key Concepts: Parts Presentation

- What is the concept of parts presentation?
  - Organization of production material in a manner that facilitates value-added manufacturing
- What are some of the key components of parts presentation?
  - Organization / orientation of incoming material
  - Kitting of material





# A Parts Presentation Example:



- 15.761J - System Optimization and Analysis: Ford Pan-European Durable Container Case<sup>2</sup>
  - Ford Motor Company: reusable containers designed to be angled on the production line for easy access to the parts

# Application Exercise

- Need a Volunteer
- Instructions:
  1. Volunteer will be given 30 seconds to review the design of the part to be assembled
  2. Compete head-to-head with instructor to determine who can assemble part the fastest while maintaining an appropriate level of quality
  3. Competitor is to receive component parts in a standard box typical of most supplier deliveries
  4. Instructor to receive component parts in a manner designed by a lean implementation team
  5. Ready...set...go!!

**What are some of the benefits of improving parts presentation?**

# Benefits of Enhanced Parts Presentation Process

- **Increased** ability to manage visually...identification of parts shortages
- **Reduced** production cycles
- **Improved** organization of work area
- **Increased** worker safety / ergonomics
- **Promotes** standardized work environment
- **Enhanced** ability to detect defects and quality issues with parts

# Disconnects of Parts Marketplaces / Parts Presentation

## ➤ Technical Factors

- Marketplace incorporation with 'push' legacy MRP systems
- Failure to adequately engage with supply base to maximize marketplace / presentation effectiveness
- Increased challenge of marketplace and presentation implementation for larger parts...yet increased benefit

## ➤ Social Factors

- Training and discipline associated with parts marketplaces
- Resistance to role / responsibility changes with parts marketplaces...potential for elimination of warehouse positions
- Outsourcing of parts kitting in organized labor environment

# Concluding Comments

## ➤ Parts Marketplaces:

- Reducing inventory does not require fundamental changes to supply chain or cycle reduction investment
- Used in conjunction with Kanban or other method of inventory control, marketplaces can effectively increase the productivity of your workforce by reducing non-value added operations

## ➤ Parts Presentation:

- Simple activities such as incoming material kitting and organization can have a significant impact on operational performance.
- Parts presentation is a valuable tool for all types of operations from assembly to machining to fabrication

## Appendix: Instructor's Comments and Class Discussion

- Important issue in manufacturing leadership:
  - Presentation/outsourcing can be carried *too far!!*
    - Can result in loss of key knowledge and long term competitive advantage
    - Outsourcing is nice for price, and may lead to short-term economic efficiency, but long term cannibalization of competency
- Parts marketplace important for other parts of lean, such as ISPC and value stream mapping, etc.
  - It also depends on a PDCA, kaizen process



# Appendix: Instructor's Guide

<b>Slide</b>	<b>Time</b>	<b>Topic</b>	<b>Additional Talking Points</b>
1-2	1-2 min	Introduction, overview and learning objectives	<ul style="list-style-type: none"> <li>• Relate to Module 9.1- Kanban</li> </ul>
3-7	2-3 min	Key Concepts: Parts Marketplaces	<ul style="list-style-type: none"> <li>• Note the differences in the two photos. Contrast this style of inventory management (traditional warehouse / stock room) to a parts marketplace system with reduced inventory volumes located strategically throughout a shop. Relate parts marketplace concept to a supermarket.</li> </ul>
6-7	2-3 min	Benefits	<ul style="list-style-type: none"> <li>• Emphasize the impact on inventory turns and the financial implications as they relate to cash. Note the increased focus on the cash position of many publicly traded companies.</li> </ul>
8-9	2-3 min	Key Concepts: Parts Presentation	<ul style="list-style-type: none"> <li>• Highlight the visual ability to easily assess if parts are missing or defective, as well as the ability to standardize work with parts presentation efforts.</li> </ul>
10	2-3 min	Exercises/Activities	<ul style="list-style-type: none"> <li>• Note the ability of the operator that does not need to sort through the packaging to inspect and orient parts is able to concentrate on value-added work.</li> </ul>
TBD	3-4 min	Disconnects	<ul style="list-style-type: none"> <li>• The most significant barrier to parts presentation and parts marketplace implementation is the resistance to change of most organizations. The technical requirements are not intellectually advanced.</li> </ul>
TBD	1-2 min	Concluding comments	<ul style="list-style-type: none"> <li>• The operational and financial impact, along with the “low technical entrance barriers” should make parts marketplaces and parts presentation improvement an integral component to any lean implementation.</li> </ul>

# Bibliography

1. Example adapted from Professor Steven Graves 15.761J Systems Optimization and Analysis course