The Principles and Practices of Lean Manufacturing

An Overview

Presented by

GRASSI & CO.
ACCOUNTANTS & SUCCESS CONSULTANTS

&

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Agenda

- Welcome and Introductions
- What is Lean?
- Overview of Principles & Tools
- Factory Exercise
- Questions & Discussion
- Wrap Up
The Principles and Practice of Lean Operations
Outline

- Lean Principles & Definitions
  1. Concepts
  2. Value vs. Waste
  3. What is Lean?

- Lean Tools and Techniques
  1. 5S & Visual Controls
  2. Kaizen
  3. Root Cause Analysis
  4. Value Streams
  5. Pull Manufacturing
  6. Mistake Proofing
  7. Quick Changeover
  8. Theory of Constraints
  9. Human Factors
Lean Principles
The Principles of Lean

1. **Specify value** from the standpoint of the end customer

2. **Identify** all the steps in the value stream, eliminating whenever possible those steps that do not create value

3. Make the value-creating steps occur in **tight sequence** so the product will **flow** smoothly toward the customer

4. As flow is introduced, let customers **pull** value from the next upstream activity

5. As value is specified, value streams are identified, wasted steps are removed, and flow and pull are introduced, **begin the process again** until a state of perfection is reached in which perfect value is created with no waste

*The Machine That Changed The World, Womack, 1990*
The Beginnings of Lean...

- 1900 Toyoda – textiles, turn of century, stopped looms when threads broke
- 1934 Toyota Motors Corp. – tired of repairing poor quality so studied processes intensely
- 1936 Toyota – started first “Kaizen” improvement teams
- Taiichi Ohno – studied US supermarkets and saw need to control production to produce only to demand
- Post War – Demming assists Japan with quality

Is that the whole story?.....
The Beginnings of Lean...

- There were others..
- Henry Ford develops Model T assembly line and writes about “Design for Manufacture” (circa 1910)
- Frank Gilbreth proves the worth of time study (1890’s)
- Fredrick Taylor promotes standardization (1911)
- Even Ben Franklin wrote about saving time, reducing waste, and unnecessary inventory
- War Production Board in 1940’s US promoted many “lean” concepts that would build needed production quicker
- Shiego Shingo cited Taylors “Scientific Management” as he developed SMED in Japanese auto industry
The Principles of Lean

1. Identify Value

2. Map the Value Stream

3. Create Flow

4. Establish Pull

5. Seek Perfection

Continuous Improvement

*The Machine That Changed The World, Womack, 1990*
Definitions

- **Value** - A capability provided to a customer at the right time, at an appropriate price, as defined in each case by the customer.
  - Features of the product or service, availability, cost and performance are dimensions of value.

- **Waste** - Any activity that consumes resources but creates no value.
What is Lean?

- Lean production **focuses on** eliminating **waste** in processes (i.e. the waste of work in progress and finished good inventories)
- Lean production **is not** about eliminating people
- Lean production **is about** expanding capacity by reducing costs and shortening cycle times between order and ship date
- Lean **is about** understanding what is important to the customer
Types of Waste

- Overproduction
- Excess inventory
- Defects
- Non-value added processing
- Waiting
- Underutilized people
- Excess motion
- Transportation
Lean isn’t Just for the Plant…the Office can create Just as Much Waste in Time and Manpower

Office or Administrative Waste includes:
- Disorganization
- Communication Barriers
- Poor Hand Offs
- Useless Information
- Discarded knowledge
Lean Tools & Techniques
Outline

- 5S & Visual Controls
- Kaizen
- Root Cause Analysis
- Value Streams
- Pull Manufacturing
- Mistake Proofing
- Quick Changeover
- Theory of Constraints
- Human Factors
5S & Visual Control
5S and Visual Control

- 5 Elements of 5S
- Why 5S?
- Waste
- Workplace observation
- **Sort**
- **Straighten**
- **Shine**
- **Standardize**
- **Sustain**
- Visual Factory
Why 5S?

• To eliminate the wastes that result from “uncontrolled” processes.
After 5S

- Clear, shiny aisles
- Color-coded areas
- Slogans & banners
- Reduced work in process
Sort
(Seiri)

- When in doubt, move it out
- Prepare red tags
- Attach red tags to unneeded items
- Remove red-tagged items to “dinosaur burial ground”
- Evaluate / disposition of red-tagged items
Straighten (Seiton)

- Make it obvious where things belong
  - Lines
    - Divider lines
    - Outlines
    - Limit lines (height, minimum/maximum)
    - Arrows show direction
  - Labels
    - Color coding
    - Item location
  - Signs
    - Equipment related information
    - Show location, type, quantity, etc.
Shine
(Seiso)

- Clean everything, inside and out
- Inspect through cleaning
- Prevent dirt, and contamination from reoccurring

Results in
- Fewer breakdowns
- Greater safety
- Product quality
- More satisfying work environment
Standardize
(Seiketsu)

- Establish guidelines for the team 5-S conditions
- Make the standards and 5-S guidelines visual
- Maintain and monitor those conditions
Sustain
(Shitsuke)

Determine the methods your team will use to maintain adherence to the standards

- 5-S concept training
- 5-S communication board
- Before and after photos
- Visual standards and procedures
- Daily 5-minute 5-S activities
- Weekly 5-S application
After
Before
After
Before
After
After
After
Kaizen
What is Kaizen?

- Kaizen (Ky’zen)
- “Kai” means “change”
- “zen” means “good (for the better)”
- Gradual, orderly, and continuous improvement
- Ongoing improvement involving everyone
- Speed of implementation – create small victories
How to Kaizen

- Identify
- Plan – identify what to change and how to do it
- Do – execute the improvement
- Check – ensure the improvement works
- Act – future and ongoing improvements
- Repeat
Kaizen Blitz

- Total focus on a defined process to create radical improvement in a short period of time
- Dramatic improvements in productivity, quality, delivery, lead-time, set-up time, space utilization, work in process, workplace organization
- Typically five days (one week) long
Kaizen Blitz - Agenda

- **Day 1: Setting the scene**
  - Meet the team, training

- **Day 2: Observe the current process**
  - Flowchart, identify waste, identify root causes

- **Day 3: Develop the future state process**
  - Brainstorm and flowchart (typically the longest day!)

- **Day 4: Implement the new process**
  - Plan, communicate, implement, modify

- **Day 5: Report and analyze**
  - Performance vs expectations
Setting Goals

- Why do we set Goals?
  - GOALS are required so we know where we are going and when we have arrived
  - GOALS provide focus and attention
  - GOALS provide us with a measuring stick to let us know how we are doing
Goals Characteristics

- Good Goals are SMART
  - **S**pecific
  - **M**easurable
    - We don’t question what we don’t measure
    - If we cannot express what we know in numbers, we do not know much about it
    - If we don’t know much about it we cannot control it
    - If we cannot control it we are at the mercy of chance
Goals Characteristics

- Good Goals are SMART
  - Attainable ( & Challenging)
    - Challenging goals lead to higher performance
    - Easy goals produce low effort because the goal is too easy to reach
    - Impossible goals ultimately lead to lower performance because people begin to experience failure
    - We must know what is in our control to fix or change
Goals Characteristics

- Good Goals are SMART
- **R**elevant ( & Important to the Team and the Individual)
  - Identify important goals
    - Which goals are important:
      - To individual?
      - To the Team?
      - To the business?
      - To the customer?
Goals Characteristics

- Good Goals are SMART
  - **T**ime based
    - Deadline sparks productivity
After
Before
After
Root Cause Analysis
What is a root cause?

**ROOT CAUSE =**

- The contributing “factors” that, if corrected, would prevent recurrence of the identified problem.

- The “factor” that caused a problem or defect and should be permanently eliminated through process improvement.

- The “factor” that sets in motion the cause and effect chain that creates a problem.

- The “true” reason that contributed to the creation of a problem, defect or nonconformance.
What is root cause analysis?

- A standard process of:
  - identifying a problem
  - containing and analyzing the problem
  - defining the root cause
  - defining and implementing the actions required to eliminate the root cause
  - validating that the corrective action prevented recurrence of problem
Hints about root causes

- One problem may have more than one root cause
- One root cause may be contributing to many problems
- When the root cause is not addressed, expect the problem to reoccur
- Prevention is the key!
But who’s to blame?

- The “no blame” environment is critical
- Most human errors are due to a process error
- A sufficiently robust process can eliminate human errors
- Placing blame does not correct a root cause situation
  - Is training appropriate and adequate?
  - Is documentation available, correct, and clear?
  - Are the right skill sets present?
Importance of the root cause

Not knowing the root cause can lead to costly band aids.

- The Washington Monument was degrading
  - Why? Use of harsh chemicals
  - Why? To clean up after pigeons
  - Why so many pigeons? They eat spiders and there are a lot of spiders at the monument
  - Why so many spiders? They eat gnats and lots of gnats at the monument
  - Why so many gnats? They are attracted to the light at dusk.

Solution: Turn on the lights at a later time.
What is a Cause-Effect Diagram?

- A Cause-Effect (also called “Ishikawa” or “Fishbone”) Diagram is a Data Analysis/Process Management Tool used to:
  - Organize and sort ideas about causes contributing to a particular problem or issue
  - Gather and group ideas
  - Encourage creativity
  - Breakdown communication barriers
  - Encourage “ownership” of ideas
  - Overcome infighting
Steps used to create a Cause-Effect Diagram:
- Define the issue or problem clearly
- Decide on the root causes of the observed issue or problem
- Brainstorm each of the cause categories
- Write ideas on the cause-effect diagram. A generic example is shown below:

NOTE: Causes are not limited to the 5 listed categories, but serve as a starting point
Allow team members to specify where ideas fit into the diagram
Clarify the meaning of each idea using the group to refine the ideas. For example:

- Materials
  - Incorrect Quantity
  - Incorrect BOL
  - Wrong Destination
- Methods
  - Late Dispatch
  - Shipping Delay
  - Spillage
- Environment
  - Traffic Delays
  - Weather
  - Breakdown
- Wrong Equipment
- Dirty Equipment
- Equipment
- People
- Driver
  - Attitude
- Wrong Directions

Shipping Problems
5 Why’s

- Ask “Why?” five times
- Stop when the corrective actions do not change
- Stop when the answers become less important
- Stop when the root cause condition is isolated
Value Streams
Outline

- What are Value Streams?
- Identifying the Value Streams
- Value Stream Mapping
- The Current State
- The Future State
What Are Value Streams?

A **Value Stream** is the set of all actions (both value added and non value added) required to bring a specific product or service from raw material through to the customer.
Types of Value Streams

“Whenever there is a product (or service) for a customer, there is a value stream. The challenge lies in seeing it.”

- 3 enterprise value streams:
  - Raw Materials to Customer - Manufacturing
  - Concept to Launch - Engineering
  - Order to Cash - Administrative Functions
Administrative Mapping

- Administrative activities are often a major percentage of the total throughput time.
- Include functions such as engineering, purchasing, order entry and scheduling
- "Inventory" is typically paperwork
- Information flow is typically informal
Value Stream Mapping

- Helps you **visualize** more than the single process level
- **Links the material and information** flows
- Provides a **common language**
- Provides a **blueprint for implementation**
- More useful than quantitative tools
- **Ties together lean concepts and techniques**
Value Stream Mapping

- Follow a “product” or “service” from beginning to end, and draw a visual representation of every process in the material & information flow. The result is the “current state”

- Then, draw (using icons) a “future state” map of how value should flow.
The Current State

Production Control

Weekly Schedule

Stamping 200 T
- 4600 L
- 2400 R
- C/T = 1 second
- C/O = 1 hour
- Uptime = 85%
- 27,000 sec. avail.
- EPE = 2 weeks

Weld #1 1100 L
- 600 R
- C/T = 38 seconds
- C/O = 10 minutes
- Uptime = 100%
- 27,000 sec. avail.

Weld #2 1600 L
- 850 R
- C/T = 45 seconds
- C/O = 10 minutes
- Uptime = 80%
- 27,000 sec. avail.

Assembly #1 1200 L
- 640 R
- C/T = 61 seconds
- C/O = 
- Uptime = 100%
- 27,000 sec. avail.

Assembly #2 1200 L
- 640 R
- C/T = 39 seconds
- C/O = 
- Uptime = 100%
- 27,000 sec. avail.

Shipping Staging

Production Lead Time = 23.5 days
Value-Added Time = 184 sec.
The Current State

- Typical Results
  - 80 – 90% of total steps are waste from standpoint of end customer.
  - 99.9% of throughput time is wasted time.
The Future State

- Completed in a day with the same team
- Focused on:
  - Creating a flexible, reactive system that quickly adapts to changing customer needs
  - Eliminating waste
  - Creating flow
  - Producing on demand
The Current State

Acme Stamping Orders
Weekly Fax

Michigan Steel Order Entry Process
Current State - May, 2004

Receive Order
Check Credit
Review & Enter Order
Reconcile Order
Confirm Order
Finalize Order

P/T = ½ min
Batch = 4 hours

P/T = 1 min
% accept = 90%
Batch = 4 hours

P/T = 10 min
% C&A = 60%
Batch = 1.6 hours

P/T = 1 min
% C&A = 75%
Batch = 1.6 hours

P/T = 7 min
% C&A = 85%
Batch = 2 hours

P/T = 5 min
Batch = 1 day

½ min 1 min 10 min 1 min 7 min 5 min
5 days 5 days .2 days .2 days 25 days 1 day

Total Lead Time = 2.65 days
Total Processing Time = 24.5 min
First Pass Yield = 34.4%
The Future State

Acme Stamping Orders

On-Line Order Entry

Phone/Web

Link Finance And MRP

Finance cross-train

Receive/Credit/Reconcile/Confirm

MRP/FIN

Takt = 10 minutes
P/T < 10 minutes
% accept = 90%
Batch = 1 order

Implement Kanban

Schedule Production via FG Kanban

Direct-schedule shipping

Ship Schedule

Shipping

Michigan Steel Order Entry
Future State - 5/1/04

Total Lead Time < 10 minutes
Total Processing Time < 10 min.
First Pass Yield > 90%
Pull Manufacturing
Outline

- Push Vs Pull Manufacturing
- The Problem of Inventory
- Just In Time
- Kanban
- One Piece Flow
- Demand / Pull
Push Vs. Pull Scheduling

**Push Scheduling**
- Traditional approach
- Usually work order driven
- Very transactional (**Kitting and Issuing** material)
- Completed items typically move in **batches**
- Difficult to keep work priorities synchronized
- “**Piles**” of inventory on the production floor is the most visible characteristic
Push Vs. Pull Scheduling

- **Pull scheduling**
  - Coordinated production
  - Driven by demand (**pulled through system**)
    - Nothing is produced by the upstream supplier until the downstream customer signals a need.
    - **The rate of production for each product is equal to the rate of customer consumption**
  - Extensive use of visual triggers (production/withdrawal kanbans)
Inventory Hides Problems

Work in process inventory level (hides problems)

Unreliable Vendors

Scrap

Capacity Imbalances
Lowering Inventory Reveals Problems

Accommodate lower inventory levels by:

- Reducing variability
- Eliminating waste
- Streamlining production and material flows
- Accurate information
One Piece Flow

- A philosophy that rejects batch, lot or mass processing as wasteful.
- States that **product should move** (flow) from operation to operation, **only when it is needed, in the smallest increment**.
- **One piece is the ultimate** (one-piece-flow)
Kanban

- Japanese word for “sign, card, billboard”
- Authorizes production from downstream operations based on physical consumption
- May be a card, flag, visual signal, etc.
- Used often with fixed-size containers
- **Kanban quantities are a function of lead-time and consumption rate**
<table>
<thead>
<tr>
<th>Unique Part #</th>
<th>Description</th>
<th>Qty</th>
<th>Where to find part when bin is empty</th>
<th>Where to return filled Kanban</th>
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<tr>
<td>46-281247p1</td>
<td>27” Al Rim</td>
<td>23</td>
<td>RIP 1</td>
<td>Asm. 1</td>
</tr>
</tbody>
</table>
Kanban Example

Product Consumed

- Kanban Replenished

Front Bin Empty

- Signal Reorder

- Reorder

- Kanban Replenished

- Product Consumed
Kanban Example
Kanban Squares

Flow of work
Flow of information
Pull System

Production Schedule

Customers

Final Assy

Vendor

Leveled assembly instructions

Sub

Fab

Vendor

Vendor

Vendor

Vendor
Mistake Proofing
(Poka Yoke and Error Proofing)
What is Mistake Proofing?

- The use of process or design features to prevent errors or their negative impact
- Also known as *Poké yoke*, Japanese slang for “avoiding inadvertent errors”
- **Inexpensive**
- **Very effective**
- Based on *simplicity and ingenuity*
The 1-10-100 rule states that as a product or service moves through the production system, the cost of correcting an error multiplies by 10.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order entered correctly</td>
<td>$ 1</td>
</tr>
<tr>
<td>Error detected in billing</td>
<td>$ 10</td>
</tr>
<tr>
<td>Error detected by customer</td>
<td>$ 100</td>
</tr>
</tbody>
</table>

Dissatisfied customer shares the experience with others...
What Causes Defects?

1. Poor procedures or standards
2. Machines
3. Non-conforming material
4. Worn tooling
5. Human Mistakes

Except for human mistakes these conditions can be predicted and corrective action can be implemented to eliminate the cause of defects.
Poka yoke

- Mistake-proofing systems
- Inexpensive Point of Origin inspection
- Quick feedback 100% of the time
3 Rules of POKA YOKE

- Don’t wait for the perfect POKA YOKE. Do it now!
- If your POKA YOKE idea has better than 50% chance to succeed...Do it!
- Do it now....improve later!
Everyday Examples

Removable memory (thumb flash drives) cannot be inserted unless the drive is oriented correctly. The contact surfaces within the drive occupy only one-half the height of the insert. A solid block occupies the other half which must mate with the contacts of the receptacle.

Fueling area of car has three error-proofing devices:
1. insert keeps leaded-fuel nozzle from being inserted
2. tether does not allow loss of gas cap
3. gas cap has ratchet to signal proper tightness and prevent overtightening.

New lawn mowers are required to have a safety bar on the handle that must be pulled back in order to start the engine. If you let go of the safety bar, the mower blade stops in 3 seconds or less.
Everyday Examples
Which dial turns on the burner?

Stove A
Stove B
Everyday Examples
How would you operate these doors?

Push or pull? Left side or right? How did you know?
Poka-Yoke label gauge

POKA-YOKE
LABEL GAUGE

- Sides of label align with sides of window to show skew
- Bottom of label aligns with bottom of window to show height
Quick Changeover
Single Minute Exchange of Dies
What is SMED?

- Single Minute Exchange of Dies is changing process tooling in 9 minutes or less.
Why SMED?

- Reduced inventories.
- Improved productivity.
- Higher quality levels.
- Increased safety.
- Improved flexibility.
- Reduction in throughput time.
- Improve operator capabilities.
- Lower manufacturing costs.
Changeover Time Defined

- Changeover time is the total elapsed time between the last unit of good production of the previous run, at normal line efficiency, to the first unit of good production of the succeeding run, at full line efficiency.
Changeover Defined

- Changeover is the total process of converting a machine or line from running one product to another
Traditional approach

- Setup is given and fixed
- Therefore,
  - Use highly skilled setup personnel
  - Minimize product variety
  - Combine lots
  - Make large batches
Another way

- Setups CAN be improved!
- Small lot production REQUIRES short setups
- Setup time reduction of 90% and more is common
Economic Batch Quantity

Example 1: Current setup times are 3 hours and the run time per unit is 1 minute. Customers order in batches of 100. Target manufacturing cost is $1/unit and we charge $2/unit

Unit cost = \( \frac{\text{setup time} + \text{production time}}{\text{number of units}} \times \text{hourly rate} \)

= \( \frac{180 \text{ mins} + 100 \text{ mins}}{100} \times \frac{48}{60} \)

= \$2.24/\text{unit}

Therefore, we lose 24 cents for every product we make.
Economic Batch Quantity

Example 2: Increase batch size to 1000

Unit cost = \( \frac{\text{setup time} + \text{production time} \times \text{hourly rate}}{\text{number of units}} \)

= \( \frac{180 \text{ mins} + 1000 \text{ mins} \times \$48/\text{hr}}{1000 \times 60} \)

= \$0.94/\text{unit}

Advantage: 58% cost reduction

Disadvantage: Production planning is more difficult and we need to store 900 products until they are called off.
Economic Batch Quantity

Example 3: Reduce changeovers to 20 mins

Unit cost = setup time + production time x hourly rate
           number of units

= \frac{20 \text{ mins} + 100 \text{ mins}}{100} \times \frac{\$48/\text{hr}}{60}

= \$0.96/\text{unit}

Advantage: 57% cost reduction; produce only what is required
Classification of setup activities

- Type 1
  - Gathering, preparing, and returning tools, fixtures, etc.

- Type 2
  - Removing previous setup, mounting next setup on machine

- Type 3
  - Measuring, calibrating, adjusting

- Type 4
  - Producing test pieces, further adjustment until parts are good
Single Minute Exchange of Dies

- **Internal set-up activities.**
  Elements in the changeover which can only be done when the machine is stopped.

- **External set-up activities.**
  Elements that can be performed when the machine is running.
The SMED Process

- Preliminary Stage – Observe and record.
- Stage 1 – Separate internal and external activities.
- Stage 2 – Convert internal activities to external activities.
- Stage 3 – Streamline all activities.
- Stage 4 – Document internal and external procedures.
Pre-staged parts
Waste associated with finding, replacing, motion are eliminated.

Tooling supplies are clearly labeled

Tooling supplies are neatly assigned a unique location.
One touch adjustment
Handknobs and levers
Slots and keyholes

CASE PACKER GATE MOUNTING

AS MANUFACTURED

AS MODIFIED
Power tools

Power tools speed repetitive tasks
Theory of Constraints
Outline

- Introduction to Constraints
- Five Steps Of Theory of Constraints
- Drum Buffer Rope
- Issues with TOC
- Measurements
Any system can produce only as much as its critically constrained resource

Maximum Throughput = 40 units per day
Significance of Bottlenecks

- Maximum speed of the process is the speed of the slowest operation
- Any improvements will be wasted unless the bottleneck is relieved
Theory of Constraints

- Purpose is to identify constraints and exploit them to the extent possible
  - Identification of constraints allows management to take action to alleviate the constraint in the future
Theory of Constraints

- Based on the concepts of drum, buffer and ropes
  - **Drum**
    - Output of the constraint is the drumbeat
      - Sets the tempo for other operations
      - Tells upstream operations what to produce
      - Tells downstream operations what to expect
Theory of Constraints

- **Buffer**
  - Stockpile of work in process in front of constraint
  - Precaution to keep constraint running if upstream operations are interrupted

- **Ropes**
  - Limitations placed on production in upstream operations
  - Necessary to prevent flooding the constraint
Drum Buffer Rope

- **Drum-Buffer-Rope for Shop Floor Control**
  - **Drum**: The Pace Setting Resource - constraint
  - **Buffer**: The amount of protection in front of the resource
  - **Rope**: The scheduled staggered release of material to be in line with the Drum’s schedule.

A Pull System

![Diagram showing Drum Buffer Rope concept]
Five Steps Of TOC

1. Identifying the constraint
2. Decide how to exploit the constraint
3. Subordinate everything else to the decision in step 2
4. Elevate the constraint
5. Go back to step 1, but avoid inertia
Measurements Get Attention

- *We don't know what we don't know*
- *We can't act on what we don't know*
- *We won't know until we search*
- *We won't search for what we don't question*
- *We don't question what we don't measure*
- *Hence, We just don't know*
Numbers Matter

- If we cannot express what we know in numbers, we don't know much about it
- If we don't know much about it, we cannot control it
- If we cannot control it, we are at the mercy of chance
Human Factors
Outline

- Rewards & Recognition
- Effective Teams
- Effective Meetings
- Leadership Styles
Rewards & Recognition
Rewards & Recognition

Develop a rewards and recognition strategy.

- Starting with the organization’s priorities and values, determine the behaviors you want to recognize (these are your strategic objectives) and the strategic initiatives you may need to take within each facet of your pride and recognition program.
Effective Teams
Your Organization Can Benefit from Teams

- Team output usually exceeds individual output.
- Complex problems can be solved more effectively.
- Creative ideas usually are stimulated in the presence of other individuals who have the same focus, passion, and excitement.
- Teams both appreciate and take advantage of diversity.
- Support arises among team members.
The Importance of Creating High Performance Teams

- Characteristics of High Performing Teams
  - Small Size
  - Complementary Skills
  - Common Purpose
  - Specific Goals
  - Mutual Accountability
The Five Stages of Team Development

- Forming
- Storming
- Norming
- Performing
- Adjourning
Variations in Productivity and Morale during Team Development

<table>
<thead>
<tr>
<th>Team Development Stage</th>
<th>Performing</th>
<th>Norming</th>
<th>Storming</th>
<th>Forming</th>
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<tbody>
<tr>
<td>High</td>
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<tr>
<td>Low</td>
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<td>Long</td>
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<td>Time in Existence</td>
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<tr>
<td>Short</td>
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</tbody>
</table>

- Productivity
- Morale

133
Forming Stage

What you see is...

- Politeness
- Low Risk
- Guarded
- Anxiety
- Excitement
- Confusion
- Cautious
Storming Stage

What you see is...

- Listening to refute
- Feeling stuck
- Coalitions
- Confrontations
- Hidden agendas
- Competitiveness
- Member Isolation
Norming Stage

What you see is...

- Listening to hear
- Giving feedback
- Respect other’s ability
- Conflict handled constructively
- Pride in team and mission
- Supportive and helpful
- Some ambivalence
- Trust is increasing
Performing Stage

What you see is...

- Communication is direct
- Attain goals!
- Group synergy
- High-performing
- Acceptance of strengths and weaknesses
- Commitment to new challenges
Conducting Effective Meetings
Conducting Effective Meetings

Prepare for the Meeting
- Set Objectives, Time and Place, Agenda & Participants

Conducting the Meeting
- Follow Agenda, Time Parameters
- Control Discussion, Encourage All to Contribute, Apply Problem Solving Tools
- Encourage the Clash of Ideas, but Discourage the Clash of Personalities
- Listen, Reach a Consensus
- End by Clarifying What Happens Next
Leadership and Leadership Style
Dissatisfied and disconnected

- 40% of workers feel dissatisfied and disconnected from their employers.
- About one out of every four workers are simply showing up to collect a paycheck.
- Two out of every three workers do not identify with or feel motivated to drive their employer's business goals and objectives.
- Management is not viewed as an asset.

Source: The Conference Board
Employees’ dissatisfaction extends to leadership

- Almost half the leadership is viewed as uninvolved and hands off.
- 15% are in a leadership position because of their job skills and not management skills.
- Only 30% are viewed as strong leaders.

Source: The Conference Board
The LEAN LEADER’S Role:

- **LEADERS MUST BE TEACHERS**
  - Take time to teach
  - Share and Transfer ideas, skill and understanding

- **LEADERS BUILD TENSION, NOT STRESS**
  - Provide energy that can move people to action
  - Have a vision of the future; a hatred of the current reality; skills and actions to close the gap between the two

- **LEADERS ELIMINATE FEAR AND COMFORT**
  - Support an environment that encourages experimentation
The LEAN LEADER’S Role:

- LEADERS LEAD THROUGH VISIBLE DEMONSTRATION, & PARTICIPATION, NOT PROCLAMATION
  - Pull the organization through the change process
  - Participate in waste walks, kaizen events, problem solving, actively with the staff
  - Directly observe how Lean is being understood and applied first hand, not through second hand reports of a walk through
Am I Walking the Talk?

“What leaders say” must match “what they do”

Employees believe what their leaders do!
The End

(or really only the beginning...)
Questions?

Contact Information:

rcurtis@lift.org

516-848-8307