Principals of Lean Leadership

APICS Presentation
PDM – October 14, 2009
Principles of Lean leadership

**INTEGRITY**
- Self-awareness
- Self-confidence
- Team working

**DIRECTION**
- Inspire with vision
- Seize opportunity
- Take tough decisions

**RESULTS**
- Focus on impact
- Challenge and improve
- Engage stakeholders

**CAPABILITY**
- Cultivate innovation
- Get the best from everyone
- Grow from experience
Why Lean Now?

The World is Shrinking...

The Competition is Growing ...
Lean helps to quickly leverage company strengths

THE COMPETITION IS NOT STANDING STILL

Simultaneously

- Preserve Access to Market
- Grow Domestic Business
- Develop new products

Reduce Operating Costs
Hidden Waste?

RAW MATERIAL

SEA OF INVENTORY

FINISHED PRODUCT TO CONSUMER

POOR SCHEDULING

CONCRETE HEADS

LONG TRANSPORTATION

LONG SET-UP TIME

LINE IMBALANCE

ABSENTEEISM

COMMUNICATION PROBLEMS

LACK OF HOUSE KEEPING

VENDOR DELIVERY

MACHINE BREAKDOWN

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MACHINE BREAKDOWN
Lean Principles

1. Specify **value** in eyes of customer.

2. Identify value stream and eliminate **waste**.

3. Make value flow at **pull** of customer.

4. Involve & **empower** employees.

5. **Continuously** improve in pursuit of perfection.

*Origin: Toyota Production System (TPS)*
Approach to Lean

1. Admit that the present situation can be improved
2. Don’t make excuses... take action
3. Confront the problem
4. Don’t look for the perfect solution... attain partial improvement NOW.
5. Correct mistakes immediately
6. Use wisdom, not money... creativity before capital
7. Destroy myths and fixed ideas
8. Ask “why” five times to find root cause
9. Make improvements on the spot
10. Improvement never-ends... don’t expect relief!
House Without Waste

Results
- Waste Elimination Thru Continuous Improvement
- Cellular processes
- Single Piece Flow
- Value Stream Mapping
- Total Productive Maintenance
- Balanced Scorecard
- Standard Work
- Variation Elimination
- Error Proofing
- Total Productive Maintenance
- Cellular processes
- Lean training
- Reward Mechanisms
- Balanced Scorecard

Core values
- Customer focused
- Inspired people
- Our reputation
- Financial success

Lean focus
- Reduce Inventory
- Increase Thru-put
- Reduce Operating expense

Enablers
- HR Systems
- Mgt Behavior
- Communication
- Training
- JIT
- TQM
- Employee Support
- VAM
- Time

The 5 pillars
- Lean Tools
- Lean Cycle
- Cost
- Quality
- Delivery
- Flexibility
- Time
- Service
- Safety
- Morale

Lean Cycle
- Waste Elimination Thru Continuous Improvement

Lean Tools
- Multi skilled workers
- Standard Work
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Enablers
- Design For Manufacture
- Quality Function Deployment
- Supplier Certification
- Recruiting & Initiation
- Thinking Processes
- Problem solving
- Communication Tools
- Level Loading
- Lean Accounting

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Lean Enterprise
Systemic Thinking

Using Tools

- Lean Principles
- DMAIC
- VSM
- 5S
- Kaizen

Against Roadblocks and Wastes

- Communication
- Culture
- Leadership
- Strategy
- Accelerating Change

Tools

People
Culture

• Brainstorm lists of behaviors that we need more and less of in our new culture.
• These lists can help adjust our own behaviors, and to provide feedback to others.

**Need more of:**

**Need less of:**
“How To” – Tactical Path

Operations Strategic Planning

Executive Education

Organizational Education

Planning and Preparation

Current State

Data Collection
- Baseline Metrics
- Product / Process
- Volume / Mix
- Flow Charts
- Work Content

Future State

Target Design

Project Management and Execution

Balancing; Line Design; Training

Pull Scheduling, Kanban

“Lean” Business Process Design

Continual Improvement

Other Tools and Training (as required)
- Quality Improvement
- Set-Up Reduction
- Error Proofing
- Preventive Maintenance
- Kaizen
- Six Sigma Tools

Foundations:
- Employee Involvement Culture
- 5S - Workplace Organization
- Structured Problem Solving
NOTE: THE FOUNDATION FOR ALL CONTINUOUS IMPROVEMENT IS WORKPLACE ORGANIZATION AND THE TOOL FOR ACHIEVING THIS IS THE 5 “S”.
Wisdom

In modern business a range of more advanced strategies are employed, such as:

- Buying a stronger whip.
- Changing riders.
- Threatening the horse with termination.
- Appointing a committee to study the horse.
- Visiting other countries to see how they ride dead horses.
- Lowering the standards so dead horses can be included.
Definition: Policy Deployment

"Refers to the process of internalizing policies for Kaizen throughout the company, from the highest to lowest levels"

"Policy Deployment calls for everyone to interpret policy in light of his own responsibilities and for everyone to work out criteria to check his success in carrying out the policy"

Masaaki Imai
Kaizen: The Key to Japan's Competitive Success
Overview: Steps to Policy Deployment

1. Establish / Reaffirm Vision
2. Establish / Reaffirm Mission
3. Establish / Reaffirm Value Proposition
4. Perform Analysis to Generate KPIs and NFIs
5. Generate Matrix of KPIs and NFIs
6. Cascade to All Span of Control Levels

Repeat Process at All Levels
Establish / Reaffirm Vision

- The vision statement describes the underlying premises upon which the company is based.
- Premises are stated as founding or guiding principles
- They are provided to each employee at orientation
Overview: Steps to Policy Deployment

The Mission statement is based on the guiding principles. It includes:

• What the organization does
• The primary customers of the firm's product(s) or service(s);
• Where the organization is attempting to go, and
• How it will look when it arrives there

“Tha’t’s our mission statement. If people follow that, everything else seems to fall into place.”
Example Mission Statements

3M
"To solve unsolved problems innovatively“

Mary Kay Cosmetics
"To give unlimited opportunity to women."

Merck
"To preserve and improve human life."

Wal-Mart
"To give ordinary folk the chance to buy the same thing as rich people."

Walt Disney
"To make people happy."

These are the 'one-liners'. Each is supported by values that direct the implementation of the mission.
Overview: Steps to Policy Deployment

Establish / Reaffirm Vision

Establish / Reaffirm Mission

Establish / Reaffirm Value Proposition

The **Value Proposition** describes value-added elements or features of our products &/or services.

It describes why a customer would purchase from us, rather than from our competitors.
For example, **Merck**, publicly states the following values.

- Corporate social responsibility
- Unequivocal excellence in all aspects of the company
- Science-based innovation
- Honesty & integrity
- Profit, but profit from work that benefits humanity

**Walt Disney** states its values as follows.

- No cynicism
- Nurturing and promulgation of "wholesome American values"
- Creativity, dreams and imagination
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Performance Indicators

Key Performance Indicators (KPIs): Metrics indicating the overall health of the business.

KPIs are financially-based.

NFIs (non-financial indicators) are non-financial in nature.
Performance Indicators

KPIs and NFIs tell us when our Strategic and Business Plans are working.

They start at the highest level of the company, and cascade down through all levels of the organization.
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An Example: QCDISME Model

- Quality
- Cost
- Delivery
- Innovation

- Safety
- Morale

Customer Value & Retention
Employee Well-being
Community Protection

- Environment
QSDISME Performance Metrics

**Quality**

**Cost**

**Delivery**
Cycle Time, Schedule & Lead Time, Delivery Performance

**Innovation**
New Product Ideas, New Product Introductions, Process Improvement

**Safety**
Frequency/Rate of Accidents, Wellness

**Morale**
Turnover, Absenteeism, Employee Satisfaction and Empowerment, Suggestions Implemented

**Environment**
Environmental Quality, Recycling
Examples of KPIs and NFIs

Key Indicators
Florida Power & Light

- Operating and maintenance cost per customer
- Customers per employee
- Operating and maintenance cost - % change vs. consumer price index
- Customer/employee improvement index
- Credit memos per 1,000 customers
- Extension costs per new service account
- Public Service inquiries per 1,000 customers
- Average hours vehicle utilization
- Service unavailability index
- Service interruptions per 100 miles
Examples of KPIs and NFIs
Quality Measures
Westinghouse Nuclear Fuels Div.

• Customer satisfaction
• Fuel reliability
• Software errors
• Software delivery
• Fuel assembly yield
• Tubeshield yield
• Cladding yield
• Total quality costs
Other ideas for metrics ...

11 - Keys

- Formal 5S
- Visual Control
- Poka Yoke
- TPM
- Worker Flexibility
- Continuous Improvement Business Practices

- Balanced Production
- Production Scheduling
- Change-over
- Standard Work
- Focused Factory

What are you measured on?...
How to Measure and Communicate

1. Define goal(s)
2. Define data sources and integrity
3. Determine use of data (improve what)
4. Determine collection and analysis method
5. Establish baseline, trend requirements
6. Communicate and launch
7. Monitor, adapt, improve
Gathering Data

• What do you need to know?
• Where is the information?
• Who has the information?
• How will you get it?
• How accurate is it / do you need it to be?
• How will you interpret it?
• How will you act on it?
• How will you present it?
Communicating

Photo courtesy of Trumpf Mfg., Farmington CT
Principles of Lean leadership

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Project Selection & Strategic Objectives

• What projects are you considering?

• Examples:
  – Quality, scrap, or process yield
  – Cost reduction, productivity
  – Changeover time, lead time, flow
  – Standardized process & procedures
  – Team building, workgroup performance

• Do projects tie to Strategic Objectives?
Sources of High Impact Opportunity

1. Hidden factory (every process has one)
2. Lead time and non-value added muda
3. Serious problems others have failed to solve
4. Sources of waste such as scrap, downtime, overtime, or warranty claims
5. Products or processes with large backlog
6. High volume products (small improvements produce big financial impacts)
7. Problems that must be solved, no option
8. Major customer problems, returns, delivery
9. High cost items in budget
Problems to Avoid

1. Absence of clearly defined customer value
2. Fuzzy objectives
3. Poorly defined or difficult to measure metrics
4. Not tied to financials
5. Scope too broad
6. Duration too long
7. Not connected to the strategic plan
8. Solution already identified
9. Too many objectives
Using VSM’s and Strategic Direction

• Value stream maps can guide teams to focus on areas for project’s (or kaizens)
• Company goals guide teams to areas for improvement
• Project Sponsors can draft ideas for improvement
The DMAIC Process

**Define**
- Why must this project be done **NOW**?
- What is the business case for this project?
- Who is the customer?
- What is the current state?
- What will be the future state?
- What is the scope of this project?
- What are the intangible deliverables?
- What is the due date?

**Measure**
- What are the key metrics for this business process?
- Are the metrics valid and reliable?
- Do we have adequate data on this process?
- How will I measure progress?
- How will I measure ultimate success?

**Improve**
- What is the work breakdown structure for this project?
- What specific activities are necessary to meet the project’s goals?
- How will I re-integrate the various sub-projects?
- Do the changes produce the desired effects?
- Any unanticipated consequences?

**Analyze**
- Current state analysis
- Is the current state as good as the process can do (entitlement)?
- Who will help make the changes?
- What resources will we need?
- What could cause this change effort to fail?
- What major obstacles do I face in completing this project?

**Control**
- During the project, how will I control risk, quality, cost, schedule, scope, and changes to the plan?
- What types of progress reports should I send to sponsors?
- How do I assure that the business goals of the project were accomplished?
- How will I maintain the gains made?
A structured process designed to deliver ongoing breakthrough results aligned with the company strategy in a lean enterprise.

**Deployment and Approach**

**Assess and Improve Process**

1. **Deploy Strategy (DEFINE)**
   - Company Strategic Plan
     - 3-5 year Breakthrough Objectives
     - Annual Breakthrough Priorities
     - Strategic Value Streams and Initiatives

2. **Vision Alignment (MEASURE)**
   - Define Business Objectives
     - Map Current State
     - Map Future State
   - Develop Action Plan to Close Gap

3. **Identify Changes & Install (ANALYZE)**
   - Dedicate and Empower Team
     - Select Improvement Tools (workstreams)
     - Execute Events
   - Report Results

4. **Revise Process (IMPROVE)**
   - Close To-Do Items
     - Structured Source Reviews
     - Execute Continuous Improvement Process at Source
   - Report 3 Month Results

5. **Sustain (CONTROL)**
   - Assess Progress to Strategy
     - Assess Progress to Objectives
   - Take Corrective Action
   - MOR
   - Measure Results

**Timeline**

- Annual
- Each Value Stream: 3 - 4 weeks
- Each Workstream: 6 - 8 weeks
- Each Cell: On-going
- Daily/Weekly/Monthly
Step A – Define Metrics

- Identify project metrics
  - Come from policy deployment step
  - VSM’s
  - 11 keys
    - Baseline and target
Step B – Team Charter

• The team charter:
  – Documents the mission, purpose and scope of the team
  – Provides the roadmap for how the team will do business.
  – Represents agreement among members on how the team will work:
    • Partnership in making binding decisions
    • Shared accountability for delivering quality
    • In a timely and cost efficient way.
  – A “living document,” revised as conditions change.
What should be in a Team charter?

- **Background**
  - Team sponsor, background on need

- **Mission and Objectives**
  - Quantifiable, S.M.A.R.T.

- **Composition**
  - Core members, Ad Hoc members

- **Boundaries**
  - What’s in scope, what’s out of scope

- **Operations**
  - Length of project, type of project

- **Performance Assessment**
  - Targets/goals, measurement methods

- And other items as necessary
### Step B – Project charter

<table>
<thead>
<tr>
<th>Project Objective:</th>
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<tbody>
<tr>
<td>Increase from</td>
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<tr>
<td>Reduce Project Y</td>
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<tr>
<td>Baseline Goal</td>
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<tr>
<td>Target Process</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefits:</th>
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</thead>
<tbody>
<tr>
<td>$\text{Sources of Benefit}$</td>
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<table>
<thead>
<tr>
<th>Team: Green Belt</th>
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<tbody>
<tr>
<td>Sponsor</td>
</tr>
<tr>
<td>Team Members</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem Statement</th>
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<tbody>
<tr>
<td>(Clearly document what, why and impact of the problem so the team understands what must be improved)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Defect:</th>
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<tbody>
<tr>
<td>(Describe in a sentence what the variation is)</td>
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</table>

<table>
<thead>
<tr>
<th>Solution Specification</th>
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<tbody>
<tr>
<td>(Clearly document “must have” attributes as solution specifications to evaluate potential problem solutions)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In Scope:</th>
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<tbody>
<tr>
<td>(Clearly describe in a sentence what WILL BE included as part of the project solution)</td>
</tr>
</tbody>
</table>
Step C – Define Map

Credit Card Order...

- Credit card order via fax, phone, etc. Hard copy required.
- Enter in SAP, Order type: ORCC

Ship from warehouse w/o freight code?

- Yes: Process card payment for total amount (ORCC net value field)
- No: Type warehouse code & add line for est. freight total

Is cust a PLC distributor?

- Yes: Obtain charge for 3rd party freight billing
- No: Continue with process

**Notes to process:
- Training – advance payment
- Albany – calculates est. sales tax based on state (otherwise not accounted for in credit card charges).
Step D – Define Plan

Sample

Sample
Communicating the Project Plan

- **Who** - is responsible for delivering the communication, e.g. Project Champion, Master Black Belt, Black Belt, Green Belt, Quality Analyst, Process Owner, Team Member, etc.
- **What** - type of communication, e.g. team meetings, meeting minutes, team work/action items, project status reports, project timeline, project reviews/tollgates, project success stories/storyboards, etc.
- **Why** - rationale for the communication plan, i.e. to establish and enforce a contract for communication.
- **Where** - location of the communication, if specified.
- **When** - time and/or frequency of communication, e.g. every Friday, weekly, within 24 hours, etc.
- **How** - delivery mechanism of communication, e.g. electronic mail, voice mail, conference call, video presentation, etc.
- **To** - audience for the communication, e.g. senior management, the quality department, project champion, MBB, team members, etc.
Communication Plan

Typically, team charters include such deliverables as a business case, problem and goal statements, scope, milestones, and roles. What should be added, perhaps in the team charter or as a separate Define phase deliverable, is a plan or strategy for communicating information that is related to the Six Sigma project to its appropriate recipients.

<table>
<thead>
<tr>
<th>Six Sigma Project Charter Communication Plan</th>
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<tbody>
<tr>
<td><strong>What</strong></td>
</tr>
<tr>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>Project Team Meetings</td>
</tr>
<tr>
<td>Meeting Minutes</td>
</tr>
<tr>
<td>Team Work/Action Items</td>
</tr>
<tr>
<td>Status Reports, including Timeline</td>
</tr>
<tr>
<td>Project Budget</td>
</tr>
<tr>
<td>Project Reviews</td>
</tr>
<tr>
<td>Project Storyline</td>
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Lean Team Structure

• Consistent format that all teams follow
• Develop expectations and direction with leadership
  – Agree on scope
  – Agree on deliverables
  – Agree on completion date

• Establish the team
  – People best suited for the team, not ‘next on the list’
  – Enlist a facilitator if necessary
  – Establish a natural team leader
Define Team

• Define Team Purpose:
  – Kaizen, Project, Improvement, 5S, Training, Move, etc.

• Determine Team Type:
  – Ad hoc: short duration for problem or action.
  – Cross-functional: different functions/units.
  – Standing: responsibility for long-term objective.
  – Mixed level: management/non-management positions.
  – Natural or Work Team: intact organizational unit.
Team Roles You Will Need

- Leader
- Facilitator
- Planner
- Data gatherers
- Conceptualizer
- Brainstormer
- Critique
- Marketer

- Risk taker
- Market pulse
- Follow through
- Documenter
- Record keeper
- Expert in field
- Consensus builder
Locate Pool of Good Candidates

Identify Candidates:

– Ask around.
– Remember previous experience.
– Post on bulletin boards.
– Notify HR.
– Approach specific people with desired attributes.
Select Team

- Diverse styles.
- Complementary talents, intelligences.
- Size and mix of levels and units appropriate for team purpose.
- Look for integrity, open minds, emotional intelligence and personal high standards.
- Try to think who will fill which formal and informal roles.
- Notify them in writing and schedule 1st meeting.
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SIX THINKING HATS
An Approach to Directed Team Thinking

Facts & Figures
Emotions
Critical
Positive
Creativity
Control
Hat Relationships

- Facts & Figures
- Logical Positive
- Emotion
- Creativity
- Logical Critical

Control
Team Problems

• No team development or model
  – Must learn how to; conduct a meeting, determine mission and goals, assign responsibilities, build trust

• Poor team training
  – Listening, communicating, leadership, ownership, problem solving

• Wrong team focus
  – Did not seek out customer needs

• Unmet expectations
  – Attempt too much, achieve too little

• Lack of management commitment
  – Leadership must ‘walk the talk’
Management’s Role

• Provide the proper atmosphere
  – Open, honest, non-judgemental
• Allow time for the group to become effective
  – Realistic deadlines
  – Adequate time for meetings
  – Stable team membership
• Actively assist the Team
The Creative Process

Impediments to creativity:

• Believing there is only one right answer
  – No Green Hat
• We are taught to not ‘rock the boat’
• Not be able to suspend logic
• Not believing we can learn to be creative
• Not asking “What if?”, “How?”, “Why not?”
  – No Black or Yellow Hats
• Believing mistakes are always detrimental
• Thinking that play is frivolous
  – No Red Hat
Groupthink

• Team members follow an idea or decision that hasn’t been fully explored
• Concerned with maintaining friendly relations or avoiding conflict
• Abilene Paradox
Improving Creativity

• **Work at being creative**
  – Creativity is a process, not a product
  – Be persistent
  – Do something... action spurs creativity
  – Become enthusiastic about creativity

• **Build confidence**
  – Champion a new concept
  – Take a risk
  – Prepared for criticism
  – Seek help for weak areas
  – Remember everyone is capable of being creative
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