Lean Thinking Overview



What is Process Improvement?

...a structured methodology for continuous improvement !



and a type of research: 'close, careful study" "scientific investigation"

PDCA

some call it the "Deming Cycle" (QT 35-47)

What is Lean Thinking?

- Methodology focused on eliminating all waste in processes
 - Identifying 'waste' from the customer perspective and then determining how to eliminate it

Focuses on delivering products and services in the right amounts, to the right location, at the right time, in the right condition

Why lean?

- At the core lean is about driving out waste in all forms.
- Focus on value adding work that serves the customer.
- Whether manufacturing widgets or providing healthcare, both are accomplished through a series of tasks. A group of tasks is a process. Processes deliver value.
- The reduction of waste and focus on value improves business metrics.

The Healthcare Opportunity

"The level of waste in U.S. medicine approaches 50%"

> Don Berwick, MD, MPP, FRCP – President and CEO, Institute for Healthcare Improvement

Why Lean: The Philosophy

For our Customers

- 95% of physicians have witnessed a serious medical error. 61% of health care providers surveyed. . .say they accept common errors as routine practice. . . (From a survey by Robert Wood Johnson Foundation)
- "...We want to see a Toyota in health care. That's been one of the barriers in health care. No one can point to a health system and say 'That's how it ought to be done'..." (USA Today May 9, 2001)

Our Customers Deserve Flawless Products and Services

What to Expect -Improved Results !



- Facility design
- Emergency Department Flow
- Operating Room Prep
- Accounting, billing, finance
- Radiology Capacity
- Admitting / Discharge Flow
- Inventory Management
- Med Distribution & Cycle Time
- Patient Flow
- Cash Flow Receivables
- Resource Capacity OR and inventory
- Productivity FTE utilization
- Morale of Care- Providers

More Time for Care-Providers to Provide Value Efficient & Effective Quality Care!



It's Great to Have a Philosophy ... But We Need a Strategy !!





Lean History

- 1900: Frederick Taylor studied work methods and used time studies to develop standard work
- 1910: Frank and Lillian Gilbreth used process flow charts to analyze work elements including non-value added steps, and how work area design influenced worker psychological motivation
- 1920: Henry Ford developed the concept of continuous flow production and the application of JIT(the right number of parts at the right time)
- 1945: Deming & Juran: Continuous Improvement philosophies: Statistical Process Control, Pareto, PDCA
- 1950: Beginnings of Lean: Ford production techniques (assembly line), standard work, methods improvement, and others into a system called the Toyota Production System (TPS)
- 1990: Lean Manufacturing began to take root in the United States, first in manufacturing, then into the office environment, service industries, and healthcare

Lean was not created yesterday; it is the culmination of a century's worth of discovery and innovation.

What about Six Sigma?

If we accepted a goal of 99.9% error free work, then we would have

- One hour of unsafe drinking water every month
- Two unsafe plane landings per day at O'Hare airport in Chicago
- 16,000 pieces of mail lost by the U.S. Postal Service every hour
- 500 incorrect surgical operations each week
- 50 newborn babies dropped at birth by doctors each day
- 22,000 checks deducted from the wrong bank accounts each hour
- □ 32,000 missed heartbeats per person, per year

Elements of Lean Thinking

- Specify <u>Value</u> from the standpoint of the patient/customer.
- Identify the <u>Value Stream</u> for each product/process family.
- Make the information/product/service Flow.
- So the patient/customer can <u>Pull.</u>
- As you manage toward <u>Perfection.</u>

Understanding Value

Value is completely defined by the customers' expectations, therefore:

- Waste is defined as the activity or activities that a customer would not want to pay for and/or that add no value to the product or service from the customer's perspective
- Any resources expended to produce a product or service that does not add value is simply waste
 - It may be required in the current process but it's still waste



Muda (無駄) Japanese term for activity that is wasteful and doesn't add value or is unproductive





Hierarchy of Value

Keep: Value-Added Activities

Minimize: Non-Value Added, but necessary activities

 Eliminate: Non-Value Added activities that are not necessary (pure waste) What would happen if I told you that from today...

You will only be paid for Value Added Work?

Lean Deployment Strategy



Lean Thinking Demands Learning and Accountability at all Levels of the Organization

Lean Deployment Strategy: Change Leader

Becoming a Change Leader is about:

Performance: Accelerate Improvement & Standardization

- Common Measurement Systems
- Replication / Standardization
- Improvement

Behavior: Drive Cultural Change

- Common Thought Process and Vocabulary
- Applied Skills
 - An Organization That Can Flex and Execute Rapidly
- Quality Principles
 - Leaders Live the Principles

Becoming a Change Leader is about becoming a Lean Thinking Organization... NOT an organization that does Lean

Define

 Define the customer, their critical to quality issues, and the core business process involved

Measure

Measure the performance of the core business process involved

Analyze

 Analyze the process map and data collected to determine root causes of defects and opportunities for improvement

Improve

 Improve the target process by designing creative solutions to fix and prevent problems

Control

Control the improvements and keep the process on a new course

DEFINE

- Define who the customers are
- Define customer requirements and expectations
- Define project boundaries
 - The start and stop of the process
- Define the process to be improved by mapping the process flow



MEASURE

- Define Customer Demand
- Develop a data collection plan for the product or process
- Create a Value Stream Map



ANALYZE

- Identify gaps between current performance and goal performance
- Prioritize
 opportunities to
 improve
- Identify excessive sources of waste



MPROVE

- Create innovative solutions using technology and discipline
- Develop and deploy improvement implementation plans



CONTROL

- Prevent reverting back to the "old way"
- Develop an ongoing monitoring plan
- Institutionalize the improvements through system modifications

Lean Process Improvement Phases, Concepts & Tools Innovative Define Control Measure Analyze Improvement Phase Phase Phase Phase Phase Concepts: **Concepts:** Concepts: Concepts: Concepts: 1. Determine critical 1. Select Project 1. Determine outputs & 1. Generate potential 1. Control Overview inputs 2. Organize Team inputs to the process solutions 2. Sustain the 2. Data analysis 3. Draft Charter 2. Create data 2. Select & prioritize Process 3. Process analysis 4. Map the Current collection plan solutions 3. Process 4. Determine root Process 3. Plan to stratify data 3. Apply Best Practice documentation causes 5. Voice of the Customer 4. Execute data 4. Risk analysis 4. Hand off to 5. Prioritize causes 6. Plan & Manage the collection for baseline 5. Small trials of Process Owner 6. Flowchart proposed Project measures change 5. Project Learning process 7. Estimate financial 6. Confirm solutions 6. Celebrate 7. Identify Quick Hits opportunity Tools: Tools: Tools: Tools: Affinity Diagram Tools: Control Charts Fishbone Dx Current state Process Project Charter/Closure Tree Diagram Financial Benefit • 5 Why's Document (pg. 1) Map &/or VSM ROI Multivoting VSM: ID Value Added/ Operational Definition Primary Root Causes Timeline • 6S Non Value Added SIPOC Data Collection Plan Process Improvements Visual Controls Takt Time Baseline Data Stakeholder Analysis Key Learning Flow & Pull Systems Pareto Charts Communication Plan Measure Tollgate Error Proofing Pending Issues Scatter Diagrams Communication Planning Plan to Share Standard Work Spaghetti Map Matrix Knowledge Changeover Reduction FMEA Current Process Flow Workplace Layout Control Tollgate Future state Process &/ Diagram Total Productive or VSM • VOC Maintenance Analyze Tollgate • CTO Kaizen Events Define Tollgate Improvement Tollgate

Lean Tools

Process Mapping

- Process flow diagrams or charts that depict each step in a process as well as the number of people in that process and the numbers and types of documents currently used to control the process.
- The process map is used to help the team identify value added, non-value added and non-value added but required activities, and establishes a time estimate for the current process.

Process Map		
Samples of Process Map Symbols	Time	Activity
Process Step Lave	Time each	Each activity
Decision	step.	must be classified.
Ducument Arrow	most realistic	VA - Value Added
	Cantor,	BNOA-
Page or process connector	Calculate	Added
∧ mm	average	INVAR-
	per concersion	Hom-Value-
	Canoe.	Added bot
() Bectronic Storage	De Fair.	Propage and
Brepartment	Do not exagerate	
Create your own symbols but be consistent.		
Bumber each process step and add discriptive text.	Calculate a Total	Total Steps VA
Verify the accuracy of the Process Map when complete.	Process Time	IIVA IIVAR

Lean Tools:

Flow

28

Lean Tools:

Lean Tools

What is a Kanban?

30

Kanban is a tool to visually signal to an upstream process precisely what is needed when it is needed!

For materials, is it a Reorder Point a point based on <u>consumption</u>, that starts the replenishment process.

23

It's not about the tools...

- It's about creating a Lean Enterprise.
- It's about creating a culture of continuous improvement and respect for people.
- The true value in a Lean Transformation is not the short term results. It is the understanding of the people and the enabling structure created by Senior Leadership.

The Learning Curve

The principles can easily be absorbed in a day classroom. But...

The intellectually easy-to-grasp principles go against the training and practices of our whole prior careers.

"Understanding theory in the head is not the problem. The problem is to remember it in the body, to make it instinctive."

Taichi Ohno, "The Evolution of the Toyota Production System", Unpublished Manuscript

Focus on Value Streams not on Departments

Patient Flow (the common processes from registration to discharge)

Ancillary Processes (procedures or processes based on patient need)

Information (Clinical and Administration processes to document the care provided)

Think Whole-Business not Local Improvements

"The Toyota production method won't work unless it is used as an overall management system. The Toyota production system is not something that can be used only on the production floors. The belief that it is only a production method is fundamentally wrong."

Taiichi Ohno, New Production System, Productivity Press, 1988