

# LEAN WHY & HOW?

Why is Lean important & how does it work?

Chris Lindstrom, Ceptara Corp.



## Lean - 5S Exercise

- In consecutive order, i.e. 1 to 50, find each number and record how long it took to discover all 50 numbers.
  1. Start the timer
  2. Circle 1, 2, 3, 4, ... 50
  3. Stop the timer
  4. Write down how long it took in minutes & seconds

Lean – Why and How?

Circle each number in ascending (1, 2, 3, ...50) order, record how long it takes.

05

11

13 14 15 16 17 18 19 20 21 22 23 24 25 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

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Circle each number in ascending (1, 2, 3, ...50) order, record how long it takes.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

**Lean 5S Methodology**  
 – Sort, Straighten, Shine, Standardize, Sustain

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## Lean – Why and How?

## Chris Lindstrom

### Managing Partner, Ceptara Corp.

- Ceptara, established in 2002
  - Helps organizations bring excellence into focus through management consulting, business coaching, quality training and productivity tools utilizing the Lean Six Sigma toolbox.
- Experience
  - Over 20 years of management experience with technology companies such as AT&T, T-Mobile, Lucent, NCR, HP and Microsoft
  - Certified Lean Six Sigma Master Black Belt and senior member of American Society for Quality.
  - Master's of Science degree in Electrical and Computer Engineering



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## Lean – Why and How?

## Introduction

- Lean is a Continuous Improvement (CI) approach.
- Why is it important to embrace Lean (CI) thinking?
- How does Lean work?



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## What is Continuous Improvement?

- Continual improvement is an ongoing effort to improve products, or services by focusing on why they are provided and how they are produced.
  - CI is a philosophy – a “way of thinking”.
  - CI is an approach with many toolsets including Lean, Six Sigma and Theory of Constraints – a disciplined and systematic method.
  - CI requires mastery – requiring investment in skill development to a “way of thinking and doing things” to produce the best possible outcomes



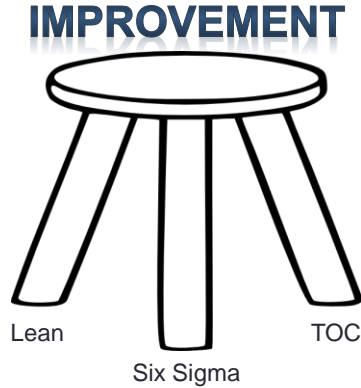
## CI Philosophy – “Way of Thinking”

- Strategies are based on a fundamental focus on the “system”.
- Attitude is founded in “self-critical” thinking – never being satisfied.
- Decisions are based on facts and data.
- Processes produce the right result the first time.
- All ‘change’ starts and ends with people.
- Failure must be an option to be a learning organization.

**Philosophy** is the study of general and fundamental problems, such as reality, knowledge, and existence, and is distinguished by its systematic approach and reliance on rational argument

# Improvement Approaches

- Lean
  - Eliminate Waste
  - Maximize Flow
- Six Sigma
  - Reduce Variation
  - Increase Predictability
- Theory of Constraints (TOC)
  - Exploit Constraints
  - Optimize Through-Put



# CI Mastery – Practice Excellence

- Lean Six Sigma
  - Yellow, Green, Black and Master Black Belt Certification
  - [www.asq.org/cert/right-for-you](http://www.asq.org/cert/right-for-you)
- Lean
  - Bronze, Silver, and Gold Certification
  - [www.sme.org/lean-certification.aspx](http://www.sme.org/lean-certification.aspx)
- TOC
  - Practitioners, Implementers, and Academics
  - [www.tocico.org/?page=Certification](http://www.tocico.org/?page=Certification)

Enterprise Deployment	Level of Competency (Belts)			
	Yellow	Green	Black	Master Black
<b>Planning</b>				
Leadership	○	○	○	○
Process Management & Measurement	○	○	○	○
Change Management				
<b>Organizational Training</b>				
Planning				
Development				
Effectiveness				
<b>Team Management</b>				
Formation				
Facilitation				
Management				
Empowerment				
<b>Define</b>				
Voice of the Customer	○	○	○	○
Program Management	○	○	○	○
<b>Measure</b>				
Process Characteristics	○	○	○	○
Data Collection	○	○	○	○
Measurement System	○	○	○	○
Probability & Statistics	○	○	○	○
System Capability	○	○	○	○
<b>Analyze</b>				
Observing & Modeling	○	○	○	○
Hypothesis Testing	○	○	○	○
Root Cause Analysis	○	○	○	○
Waste Analysis	○	○	○	○
Risk Identification	○	○	○	○
<b>Improve</b>				
Design of Experiments	○	○	○	○
Lean Approaches	○	○	○	○
Theory of Constraints	○	○	○	○
Implementation	○	○	○	○
<b>Control</b>				
Control Design	○	○	○	○
Statistical Process Control	○	○	○	○
Visual Management	○	○	○	○
Control Plans	○	○	○	○
Sustainment	○	○	○	○
<b>Design for Six Sigma</b>				
Design Methods	○	○	○	○

## Lean – Why and How?

## Why is Continuous Improvement important?

- Can a CI mindset help us (me) be more successful?
- Can it help us respond more quickly?
- Can it help us better meet our customer's expectations?
- Can it 'smooth out' inevitable unforeseen circumstances?

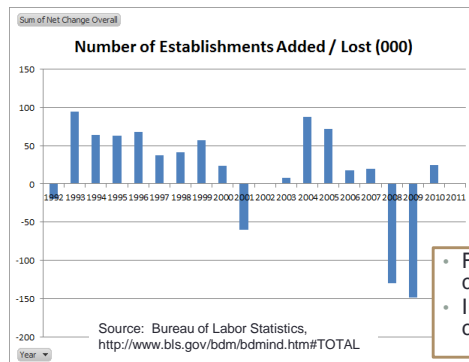


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## Lean – Why and How?

## Organizational Challenges



- From 2003 to 2008 the U.S. added ~40k companies (establishments) per year
- In 2008 and 2009, the U.S. lost ~130k companies per year

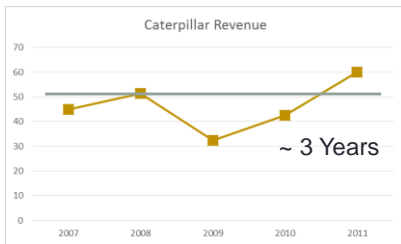
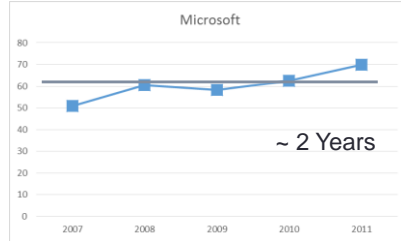
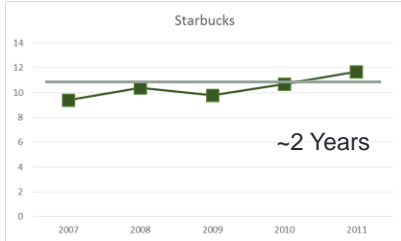
Could an 'excellent' organization have avoided the 'Great Recession'?

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Lean – Why and How?

# Some Large Companies...

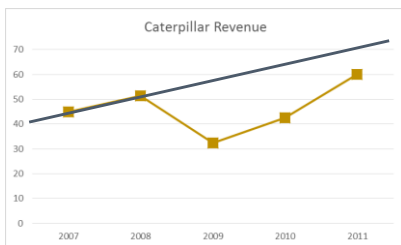
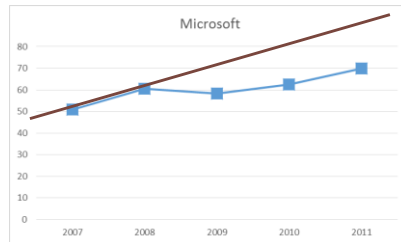
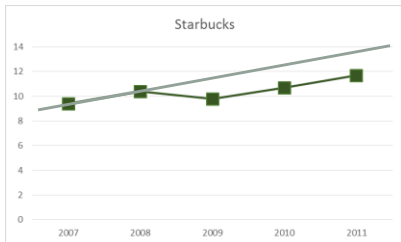


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# Some Large Companies...

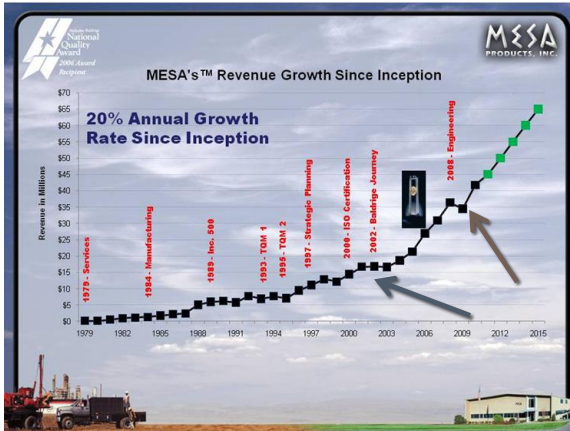


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## Lean – Why and How?

## An 'Excellent' Organization



- MESA – a manufacturer of products that prevent metal structures from corroding
  - Honored as a Presidential role model for the Malcom Baldrige Award in 2006
  - Received Small Business Baldrige award in 2012.

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## Lean – Why and How?

## City of Irving Texas

- 2012 Baldrige Winner
  - 13<sup>th</sup> most populous city in TX.
  - 217,700 residents.
  - Occupies 68 square miles including DFW Airport.
  - Core Services
    - Law Enforcement
    - Fire Protection
    - Water and Sewer
    - Refuse Collection
    - Street and Traffic Management
    - Parks, Libraries, Recreation Programs
    - Capital Improvements



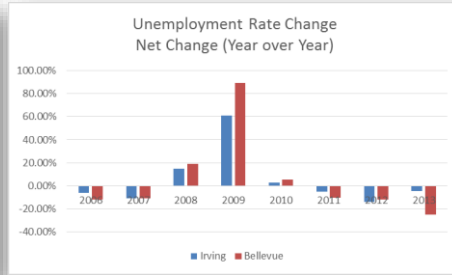
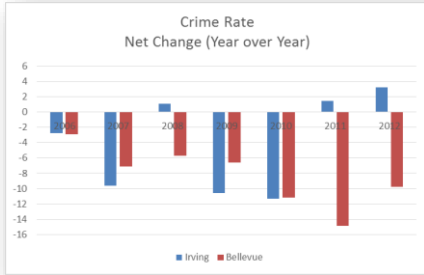
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Lean – Why and How?

# Irving TX compared to Bellevue WA



Bellevue shows greater volatility (23.31 average index change) than Irving (11.83 index change) in the net difference from one year to the next.

	Irving	Bellevue
<b>Mean</b>	11.83	23.31
<b>Std Dev</b>	9.68	8.93

Bellevue shows greater volatility (23% average change) than Irving (15% average change) in the net unemployment rate change.

	Irving	Bellevue
<b>Mean</b>	15.0%	23.0%
<b>Std Dev</b>	19.1%	27.5%



Lean – Why and How?

# Irving Key Strategic Focuses

- A Lone Star Model of Fiscal Achievement
- Citizen Feedback a Priority
- Collaborative Team Culture
- Strategic Planning & Process Efficiency
- Safe and Green



Photo courtesy of City of Irving, Texas via the Baldrige website.



## 5S Video in Erving, Texas



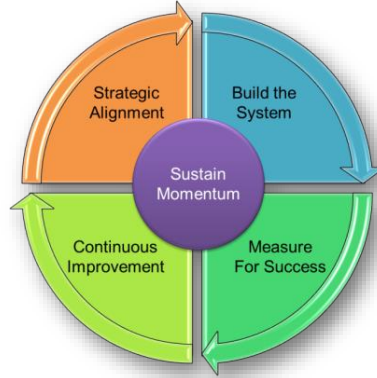
## Why is Continuous Improvement Important?

- Can a CI mindset help us (me) be more successful?
  - Mesa's revenue curve variation.
- Can it help us respond more quickly?
  - Irving's first call resolution has gone from 50% to over 90% in 2012.
- Can it help us better meet our customer's expectations?
  - Irving's Citizen Service Rating significantly higher than the state, county and US averages.
- Can it 'smooth out' inevitable unforeseen circumstances?
  - Irving's Unemployment rate change.

# YES

# How Does Lean Work?

- Lean Philosophy
- How To Approach
- Seven Habits



# LEAN Heritage



**Henry Ford**  
*(Frederick Taylor)*



**Dr. W. Edwards Deming**

**Job Instruction Training**  
**TRAINING WITHIN INDUSTRY**  
Bureau of Training  
War Manpower Commission

**Toyota Production System (TPS)**

Taiichi Ohno

Shigeo Shingo

Yoshiki Iwata with Anand

***“One thing you can’t recycle is wasted time.”***

## Toyota Way – 14 Principles

### I. Long Term Philosophy

1. Base your management decisions on a long-term philosophy, even at the expense of short-term financial goals.

### II. Right Processes Produce Right Results

2. Create a continuous process flow to bring problems to the surface.
3. Use "pull" systems to avoid overproduction.
4. Level out the workload (heijunka). (Work like the tortoise, not the hare).
5. Build a culture of stopping to fix problems, to get quality right the first time.
6. Standardized tasks and processes are the foundation for continuous improvement and employee empowerment.
7. Use visual control so no problems are hidden.
8. Use only reliable, thoroughly tested technology that serves your people and processes.

### III. Add Value to the Organization by Developing Your People

9. Grow leaders who thoroughly understand the work, live the philosophy, and teach it to others.
10. Develop exceptional people and teams who follow your company's philosophy.
11. Respect your extended network of partners and suppliers by challenging them and helping them improve.

### IV. Continuously Solving Root Problems Drives Organizational Learning

12. Go and see for yourself to thoroughly understand the situation (genchi genbutsu).
13. Make decisions slowly by consensus, thoroughly considering all options; implement decisions rapidly (nemawashi).
14. Be a learning organization through relentless reflection (hansei) and continuous improvement (kaizen).

## TPS Analysis – Spear & Bowen

### The four rules of TPS:

1. All work is highly specified in its content, sequence, timing and outcome.
2. Each worker knows who provides what to him/her and when.
3. Every product and service flows along a simple, specified path.
4. Any improvement to processes, worker/machine connections or flow path must be made in concert with the scientific method, under the guidance of a teacher, at the lowest level possible.



The DNA of the  
Toyota Production  
System

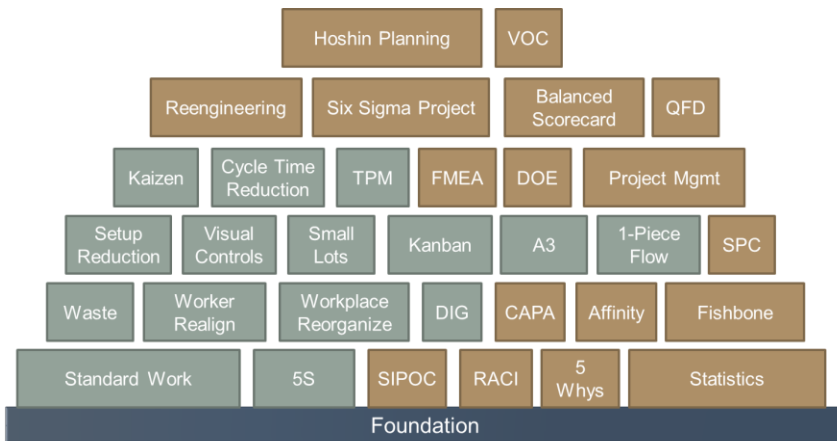


Harvard Business Review, Sept/Oct 1999

# Building an Excellent Organization



# Lean Six Sigma Approaches & Tools



## 7 Habits of Highly Effective Organizations

1. Consider the System
2. Provide Leadership
3. Align to a Plan
4. Think Scientifically
5. Be Inclusiveness
6. Build the People
7. Communicate

*We are what we  
repeatedly do.  
Excellence, then, is not  
an act but a habit.  
- Aristotle*

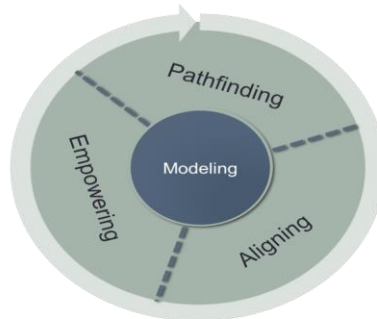
## Consider the System

- Organization is a System
  - Process Based
  - Fight Local Optima (no silos)
  - Incent People to the System
- Values Based Philosophy
  - Foundation for Decision Making
  - Must be an overall business philosophy
- Proactive Context
  - What does the customer or business need?
- Culture of Accountability
  - System wide commitment
  - Willingness to hold each other accountable
  - Reward Accountability



# Provide Leadership

- Clear & Compelling Vision
  - Inclusive vision and mission.
  - It must be personal.
  - Visual, Visual, Visual.
- Advocacy
  - Lead by Example
  - Empower
  - Create Momentum



*Covey's 4 Roles of Leadership*

# Align to a Plan

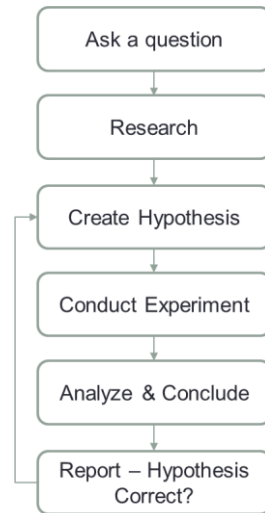
- Systematic Strategic Planning
  - Establish your Rhythm
  - Informed & Inclusive Planning
  - Drive Clarity
- Hoshin Kanri
  - Clear concise goals drive to projects
  - Project Charters are clear (no scope creep)
- Aligned KPIs
  - Metrics drive behavior (good or bad)
  - Hawthorne Effect

Process Step	When	Who
1 Collect and Analyze Data	Continuously	Senior Leaders
2 Review Mission, Vision and Values	Annually	Senior Leaders
3 Review/Update Strategic Challenges and Advantages	Annually	Senior Leaders
4 Review/Update Strategic Objectives Addressing Challenges	Annually	Senior Leaders Staff
5 Develop Action Plans	Annually	Senior Leaders Staff
6 Align KPIs at All Levels and Set Performance Targets	Annually	Senior Leaders Staff
7 Allocate Operating, Capital, Workforce Resources	Monthly	Senior Leaders Staff
8 Deploy Action Plans	Monthly	Senior Leaders Staff
9 Communicate Plan to Stakeholders and Monitor Progress	Monthly	Senior Leaders Staff
10 Evaluate/ Improve Strategic Plan Development/ Deployment Process	Continuously	Senior Leaders Staff

City of Irving Strategic Planning Process

## Scientific Thinking

- Clear Problem Statements
  - No “Lack of a Solution” problems
- Do the Research
  - Facts and data based decision making
  - Collect what you know
  - Measure if missing
  - Find the root causes
- Solutions should fix the problem.
  - Solve the root cause not the symptom
  - No “jumping to conclusions”
- Experiment to Achieve Right Result
  - Make sure the problem is fixed.



## Be Inclusiveness

1. Leadership
2. Management
3. Employees
4. Customers
5. Suppliers





## Build the People

- Skills Development
  - More than tools – tools for a reason.
  - Soft skills are 'skills' too.
  - Don't solely rely on the Black Belts / Sensei
- Embed in the System
  - Reward employees for skill acquisition
  - Encourage mentoring
  - Provide ways for sharing and teaching
- Learn
  - Promote 'self-critical' thinking.
  - Promote Improvement Kata.
  - Failure must be an option to promote learning.



## Clear & Frequent Communication

- Create a Brand
- Audience, Message, Vehicle
- Visual, Visual, Visual
- Build Excellence via Small Wins
- Show Quantitative Results
- Transfer the Knowledge
- Create Communities
- Reward Progress



## Conclusion

- Why is Lean Important?
  - Focuses on the Customer
  - Reduces Chaos
  - Builds Stronger Teams
  - **Delivers value to the organization.**
- How Does it Work?
  - System Based
  - Values Driven
  - Disciplined Approach
  - Inclusive
  - **Results Focused**



## LEAN WHY & HOW?

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