

Practical  
v  
The Neuroscience of  
Continuous Improvement

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# The Challenge

80%

of change initiatives don't work.

Lean Thinking success is even lower.

# The Human Brain



# Agenda

- 5 Points (50,000 feet view to 1,000 feet)
- Demonstration (What the brain does)
- Exploration
- Solution
- Resources
- Q and A

# Point # 1

Human interactions are wasteful, e.g. half of meetings are waste and add up to a yearly total in the U.S. of 37 billion dollars.

## Point # 2

# Process Improvement

*People improvement for process  
improvement*

People interaction improvement



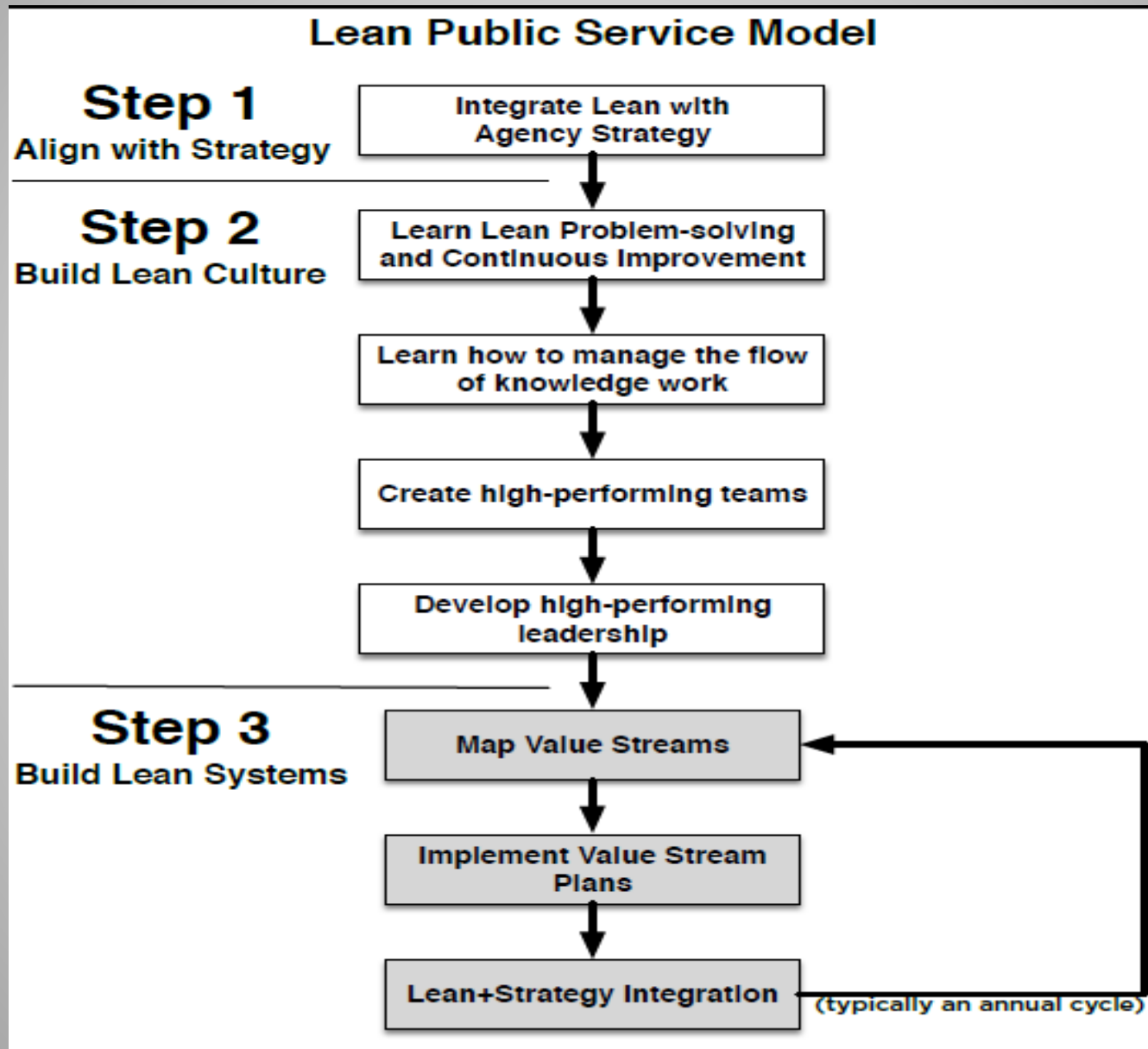
## Point # 3

Shigeo Shingo says:  
The most dangerous  
kind of waste is the  
waste we do not recognize.





# Point # 4



# Point # 5

## Process *and* People

### Classic 7 Wastes

Transportation

Inventory

Movement

Waiting

Over-production

Over-processing

Defects

*(Human Potential)*

### New 7 Assets

Teamwork

Leadership

Communication

Problem-solving

Engagement

Reward

Knowledge

# The Human Brain



# A Nice Brain Problem

- Awarded a grant
- A week of team-building training/4 hrs. a day.
- Budget is \$15,000 **each**
- Can go anywhere in the world!

Any Ideas?

# Within 2 Seconds!

- Hawaii
- France
- A cruise
- South America
- Canada

# System 1 Thinking

First choice of the brain:

- Quick
- Intuitive
- Little or no effort
- No sense of voluntary control

# System 2 Thinking

More difficult:

- Requires focused attention
- Responds when system 1 cannot work
- Source of identity and self-awareness
- Effort leads to selfishness, fatigue, urge to quit



# Neuroscience Basics

The human brain has evolved over millions of years for two purposes:

- Staying alive
- Getting genes into the gene pool

*Speed*, not LOGIC is the action.

# Neuroscience Basics

To increase speed the brain:

- Processes most information unconsciously
- Applies simplifying templates
- Accepts *good enough* results

# Normal Group Problem-Solving

Debate system 1 solutions

Decisions by:

- authority
- persuasion
- wearing down the opposition
- voting

# The Neuroscience of Continuous Improvement

Successful Continuous  
Improvement requires:

1. Team environment
2. Clear goals
3. Engaged employees

# Problem-Solving

**Standardize**



# Problem-Solving

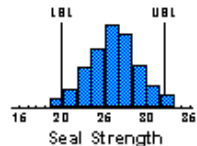
# Six Sigma Problem Solving - MAIC

## Measure

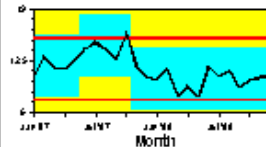
**(1) Describe the Problem**

|        | IS | IS NOT |
|--------|----|--------|
| What   |    |        |
| Where  |    |        |
| When   |    |        |
| Extent |    |        |

## (2) Measure Magnitude of Problem

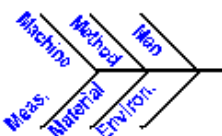


### (3) Determine When Problem Started



## Analyze

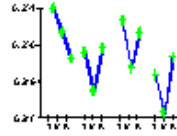
#### (4) Identify Potential Causes



**(6) Construct List of Verified Facts**

| FACTS              |
|--------------------|
| (1) All Machines   |
| (2) Second Shift   |
| (3) Certain Codes  |
| (4) Started 8/22   |
| (5) Steadily Worse |
| (6) All Operators  |

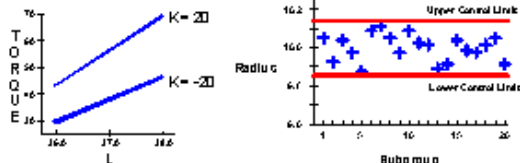
**(5) Analyze Existing Data**



**(7) Compare Causes to Facts**

|        | Fact1 | Fact2 | Fact3 | Fact4 | Fact5 |
|--------|-------|-------|-------|-------|-------|
| Cause1 | O     | X     | X     | O     | A     |
| Cause2 | X     | O     | A     | A     | O     |
| Cause3 | O     | O     | A     | A     | C     |
| Cause4 | X     | A     | X     | O     | O     |
| Cause5 | O     | O     | O     | O     | X     |

**(8) Collect Additional Data  
Until Root Cause Identified**



## Improve

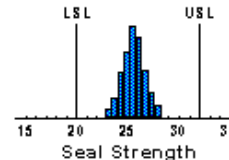
**(9) Determine Best Solution**



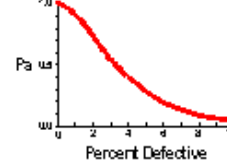
### (10) Pilot Solution



### (11) Verify Solution Works



### OC Curve



## Control

**(12) Implement Solution**

[illegible]

# The Approach

Enable unique individuals to  
problem solve together rather than  
engage in a power struggle  
or a series of debates

# The Answer!

- Slow down thinking
- Eliminate debate style problem-solving
- Enable parallel thinking
- Provide an external structure
- Assemble solutions



# The Oil Drum Story

# Harnessing the Speed of Thought®

- 1.
- 2.
- 3.
- 4.
5. Slam on the brakes

What would you do if a piece of  
Kleenex fell off the truck instead of  
an oil drum?

Nothing—you'd cruise on by.

So...

# Harnessing the Speed of Thought®

1. Identify the issue (problem/opportunity)

There is an oil drum in your lane

2. Define the goal (in measurable terms)

Avoid an accident

3. List hurdles to reaching the goal

Nearby cars, time to impact is 1.2 seconds

4. List possible solutions

Brake, swerve, pray, panic

5. Choose the best solution

Slam on the brakes

# Harnessing the Speed of Thought®

To use this model in a team:

- All must agree that each step is completed before moving to the next.
- In most cases: Apply the 4-3-2-1 Rule

# Harnessing the Speed of Thought®

You each have been given \$15,000 to spend on a week's team building together. The only stipulation is that you must daily spend at least four waking hours with one another.

# Harnessing the Speed of Thought®

1. **Issue** Spend a week together using a gift of \$15,000 each
2. **Goal** Enjoy ourselves, learn teamwork, warm climate, relaxed days, party nights, etc.
3. **Hurdles** Spend four hours together, one week, only \$15,000, away from family/friends, etc.
4. **Solutions** Hawaii, France, UK, Australia, etc.
5. **Choose** Maui in Hawaii

# Harnessing the Speed of Thought®

This model will harness the  
collective wisdom of  
high-performing teams



# Harnessing the Speed of Thought®

- 1 Identify the issue (problem or opportunity)
- 2 Define the goal (in measurable terms)
- 3 List the hurdles
- 4 List possible solutions
- 5 Choose the best solution

# Conclusion 1

- The problem is in the brain.
- Pull the problem outside of the brain.
- Structure the problem for group **mutual** decision making.

# Conclusion 2

- Process improvement  $\leq$  Developing people
- Must make invisible visible
- Do the same for all seven people assets

# Process *and* People

## Lean Thinking

### Classic 7 Wastes

Transportation  
Inventory  
Movement  
Waiting  
Over-production  
Over-processing  
Defects

### New 7 Assets

Teamwork  
Leadership  
Communication  
Problem-solving  
Engagement  
Reward  
Knowledge

# Washington State

## Early Adopter

DSHS

Streamlining *and* Authentic  
Leadership

# Resources

**What is Thought**

Eric Baum

**Thinking, Fast and Slow**

Daniel Kahneman

**Why Lean Programs Fail**

Jeffery Liker and  
Mike Rother

Lean Enterprise Inst.

# Resources

**Rapid Office Kaizen**

Carlos Venegas

**Personal Kanban**

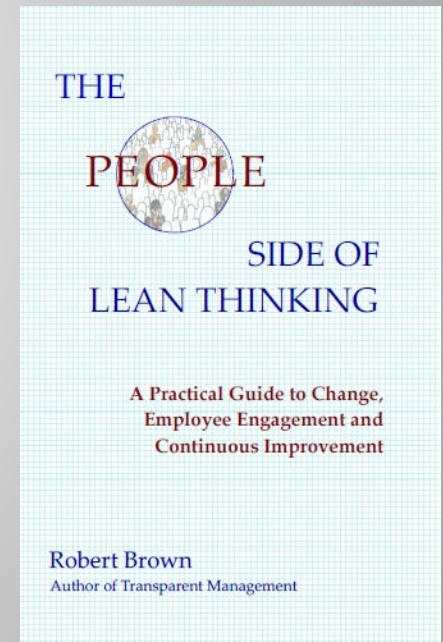
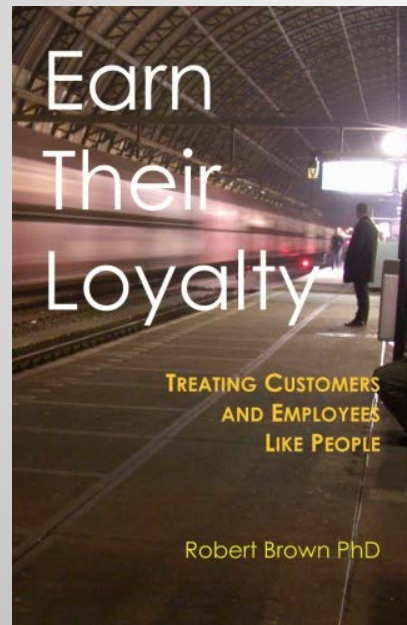
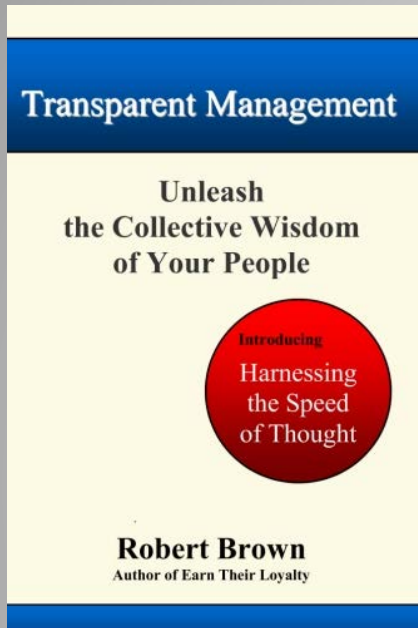
Jim Benson and

Tonianne DeMaria  
Barry

*The Neglected Half of  
Lean Thinking,*  
Quality Digest, March,  
2013

Robert Brown

# Resources





Thoughts?

Questions?

Concerns?

# Thank You

Bob Brown  
Collective Wisdom, Inc.

# Lean Public Service Model

