To Infinity (and Zero) and Beyond
Reflections on the Fabric of Lean and Six Sigma Quality

Presented by
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Abstract: Controversially, this session is about NOT doing Six Sigma and Lean. Bill will explain a more moderate approach, which he feels can be adapted more beneficially into individual companies. Using his experience at The Boeing Company, he will address the notion that every company needs a little fat – Lean is not always the right method to use. The purpose of this session is to provoke thought on whether or not your company should be adopting Lean Six Sigma or not, and hence more time has been allowed for inevitable questions and answers:
Deciding your position: Just how moderate should you be?
Dispelling the one-size-fits-all thinking
Stop aiming for Zero: How leaders should make the decisions on implementation
Agenda

- Aim
- InSights
- Interchangeable Parts
- Better Thinking About Thinking
- Imagine the Possibilities...
Aim

Introduce the *potential energy* of integrating the management theories and thinking of

Dr. W. Edwards Deming

Dr. Genichi Taguchi

Dr. Edward de Bono

and many others...
Decisions

“If your boss gives you a question and only 5 minutes to answer it, there are only 3 possible answers – 0, 1, and infinity. You’ll have five minutes to decide which one it is.”

Professor R.E. Mayle
Perception & Thinking

“How the world we perceive works depends on how we think. The world we perceive is a world we bring forth through our thinking.”

H. Thomas Johnson
Tank Engines and Rocket Engines
Courage To Imagine...

“The courage to imagine the otherwise is our greatest resource, adding color and suspense to our life.”

Daniel Boorstin
InThinking & Enterprise Thinking

Increase individual awareness on thinking (InThinking)

Evolve the way we behave

Evolve the way we think together (Enterprise Thinking)

Evolve the way we run our organizations
InSights
W. E. Deming on Quality

“A product or a service possesses quality if it helps somebody and enjoys a good and sustainable market”

Variation....
Variation....Exists
Philip Crosby on Quality

- “Zero defects is another way of saying ‘do it right the first time’”
- Quality is defined as conformance to requirements

Source: Let’s Talk Quality, Philip Crosby, 1989
Defects

Hole Diameter, inches

Frequency

LOWER SPEC LIMIT
UPPER SPEC LIMIT

0.2298 0.2299 0.2300 0.2301 0.2302 0.2303 0.2304 0.2305 0.2306 0.2307 0.2308 0.2309 0.2310 0.2311 0.2312 0.2313
0 50 100 150 200 250 300 350

0.2298 0.2300 0.2302 0.2303 0.2304 0.2305 0.2306 0.2307 0.2309 0.2310 0.2312 0.2313

101 42 121 206 166 80 31 12 10 1 5 7 2

Defects

Defects
Genichi Taguchi on Quality

“Quality is the minimum of loss imparted to the Society by a product after its shipment to a customer”

Source: Introduction to Quality Engineering, Genichi Taguchi, 1983
Gear Wear Task Force

Problem: Excess wear on splines
Edward de Bono on Quality

“The quality of our thinking will determine the quality of our future.”

Edward de Bono
Resource Management
The Boeing Company - Vision 2016

- **Core Competencies**
  - Detailed Customer Knowledge
  - Large-Scale Systems Integration
  - Lean Enterprise

- **Values**
  - Leadership
  - Integrity
  - Quality
  - Customer Satisfaction
  - People Working Together
  - A Diverse and Involved Team
  - Good Corporate Citizenship
  - Enhancing Shareholder Value
Expectation Dynamics

Value

Delight

Satisfaction

Disappointment

Expectation
Assumptions

- A better way to operate an organization is to invest resources with the ability to manage customer delight, satisfaction, and disappointment.
- Better investment results from discovering opportunities to invest.
- The discovery of opportunities for investment is limited by how thinking is conditioned.
What is needed?

Thinking that promotes better discovery
Counting Heads

Are two heads better than one?
Togetherness

- What does it mean to “work together”? 
- What does it mean to “learn together”? 
- What does it mean to “think together”?
Together

“In or into contact or association”

“In or into harmony or coherence”

Merriam-Webster Dictionary
Counting Straws

WHICH STRAW BROKE THE CAMPAIGN BACK?
Team?
United We Stand
United We Eat?
Coffee farmers around the world were invited to send us their best beans for our annual coffee competition. Through precision and artistry, we blended and roasted the finest into something extraordinary.

Starbucks’ Special Reserve Blend 2004
Parts
or
Parts Of?
Systems Perspective

“When we try to pick out anything by itself, we find it hitched to everything else in the universe.”

Thomas Muir
Water Logic
We all live downstream.
Cause & Effect

- MPG
- Pulse
- Exam Grade
- Business Results
What’s Old?

- Driving Change
- Reliance on Reforming
- Reducing Variation, Cost, Waste, Inventory, etc.
- Talk about “Working Together”
- Striving for “Zero Defects” and “Zero Waste”
- Continuous Improvement
- Using Metrics for Alignment*

*without a thinking transformation
Twin Day
(AKA Variation Reduction Day)
What’s New?

- Leading Transformation
- Use of Reformation and Transformation
- Resource & Relationship Management (Striving for Balance)
- Thinking & Learning Together - Then Working Together
- Continuous Investment
- Using Thinking for Alignment
  - InThinking and Enterprise Thinking
Interchangeable Parts
Interchangeable Parts ??

Space Shuttle Main Engine
Interchangeable Parts ??
Sorting Circles

Connect the 2 of these 3 circles that are closest to being the same:
Sorting Circles, Part 2

Which 2 of these 3 circles are closest to having the same diameter?
Cutting Wood

Given a piece of wood that will be cut into 2 pieces....

how many lines will be drawn across the top face before the cut is made?
Cutting Wood
Cutting Wood
Decisions Decisions

Which 2 of these 3 circles are closest to having the same diameter?
Taguchi’s Quality Loss Function

“Loss to Society”

Lower Specification Limit | TARGET (desired value of parameter) | Upper Specification Limit
A Better View

“The Taguchi Loss Function is a better view of the world.”

W. Edwards Deming

Source: Out of the Crisis, W. Edwards Deming, 1986
Better Thinking About Thinking
InThinking & Enterprise

Thinking

Increase individual awareness on thinking (InThinking)

Evolve the way we behave

Evolve the way we think together (Enterprise Thinking)

Evolve the way we run our organizations
Investment Opportunities

Thinking

Technology
“The significant problems we face cannot be solved at the same level of thinking we were at when we created them.”

Albert Einstein
Transformation

Potential Energy
“Better Thinking”

Kinetic Energy
“Better Value”
Visioning

“it’s not what the vision is that is important...

it’s what the vision does...”

Robert Fritz

Source: The Fifth Discipline, Peter Senge, 1992
Imagine the Possibilities...

- when operating in an “Enterprise Thinking” environment
- if we could develop a broader appreciation of “continuous and connected learning”
- if we could develop a deeper appreciation of “working together,” “learning together,” and “thinking together”
Imagine the Possibilities...

- and the markets we could create

  Working Together
  Investing Together
  Designing Together
  Building Together
  Learning Together
  Thinking Together
  Leading Together
What’s Next?

- Thinking Together
- Rethinking “Working Together”
- Rethinking “Learning Together”
- Rethinking “Management”
- Rethinking “Leadership”
- Rethinking “Ethics”
- Rethinking “Interchangeable Parts”
- Rethinking ???
What’s Next?

“The greatest discovery of my generation is that human beings can alter their lives by altering their attitudes of mind.”

William James