“Thinking Together About Other Stuff”

How Better Thinking is Leading to Better Doing

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Presented by
Bill Bellows, Tim Higgins, And Joe Onstott

The Boeing Company
Canoga Park, CA  91309
Agenda

- Bill Bellows - Introduction & Overview - Better Thinking
- Tim Higgins - Thinking Roadmap
- Joe Onstott - Better Value
Utilization of Thinking

✔ Where are we going?
✔ Where does this fit in?
✔ Where did this come from?
✔ What is my role?
✔ What is this part of?
✔ Where should we invest?
Utilization of Thinking

✓ ...about managing variation
✓ ...about managing resources
✓ ...about seeing systems
✓ ...about psychology
✓ ...about the utility of theories
Assumptions

✓ A better way to operate an organization is to invest resources with the ability to delight customers

✓ 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
The role of better thinking...

Increase awareness on thinking

Change the way we behave

Change the way we work together

Change the way we run our organizations
Question

✔ What is this a part of?
Water and Rock Logic

**Water Logic**
- What is this a part of?
- Where did this come from?
- What will this lead to?

**Rock Logic**
- Event focussed
- Part focussed
- Piece focussed

Source: *Water Logic*, Dr. Edward de Bono
“When Pipp’s crew got done taking apart and reassembling the Toyota truck, they were speechless. They hadn’t once needed to pick up a mallet. The truck was entirely snap-fit. They had never seen anything like it.”

Source: *Phophets in the Dark*, David Kearns and Gerald Nadler
Opportunity

Potential Energy
“Better Thinking”

Kinetic Energy
“Better Value”
Thinking Roadmap

Better Thinking results from following a Thinking Roadmap. Ours is based on an integration of the management theories of Dr. W. Edwards Deming and Dr. Genichi Taguchi and others...
Question: Cutting Wood
Question: Cutting Wood

target
Investment

✔️ Water Logic
✔️ Spending $ to save $
✔️ Spending time to save time
✔️ Spending resources to save resources
✔️ Examples
  ✔ college education, roof repair, time with kids
Picking Up Nails

Spending time (yours) to
Save time (others)

Minimizing Loss to Society
Seeing Organizations as Systems
The Process View ("work with")

A Thinking Roadmap

✓ Understanding Variation
✓ Understanding Taguchi Methods
✓ Problem Solving & Decision Making
✓ The New Economics Study Session
✓ Partnering Workshop
✓ Six Thinking Hats
✓ Lateral Thinking
✓ Managing Variation as a System
Thinking Hats

Managing the thinking

Information

Creativity

Benefits

Feelings

Caution

Source: *Six Thinking Hats*, Dr. Edward de Bono, 1993
Better Value

- Design, development and manufacture of End Item Products that meet target price, schedule and quality

By what method?

- Design for Producibility (manufacturability)
Better Value - A traditional approach

✔ Producible Design definition:
   An end product that is manufacturable, testable, inspectable, and supportable using standard processes with minimum variability, requiring minimum tooling, meets high quality, ensures rapid cycle time, and is minimum cost
Better Value - A better approach

✓ Design end items to process capability
  – Manage variation

✓ Develop processes to meet design reqts
  – Process control vs. inspection

✓ Maximize customer delight by using:
  – The right amount of tooling
  – The right investment of time
  – The right investment of money
Better Value - Tube Fit in Hole

Consider a tube fit into a hole

![Diagram showing a tube fitting into a hole with dimensions .2305 ± .0005 Hole]
Better Value - Drilled Hole Data

FREQUENCY

MACHINING RESULTS FOR 1080 HOLES

SOURCE: Dave Deily
10/2/92
Better Value - Tube in Hole, Next Assembly

_Rock Logic_

**Traditional Approach**
- Ream/ rework holes
- Braze flow thru holes
- Crack welds
- Add grind operation
- Add etch operation
- Add better etch operation

_Water Logic_

**Better Approach**
- Improve hole drilling
  - To target
  - Better distribution
- Assembly snap fit
- Successful braze
Better Value - Drilled Hole Data, Post Taguchi experiment

MACHINING RESULTS FOR 1080 HOLES - "BEFORE" & "AFTER"

SOURCE: Dave Deily
10/2/92

HOLE DIAMETER, INCHES

FREQUENCY

LOWER SPEC LIMIT
TARGET
UPPER SPEC LIMIT

"BEFORE"  "AFTER #1"  "AFTER #2"
Better Value - Component Brazing

Major component Braze Joints

628 Posts /Joints

1256 Braze Fillets
Better Value - Brazing

Two line thinking:
✓ All within spec the same
✓ Maximum Material Condition best
  – Can be reworked

Results:
✓ Two braze cycles
✓ $30,000

One line thinking:
✓ Target is best
✓ Loss increases as part moves away from target
✓ Design within capability of process

Results:
✓ One braze cycle
✓ $9,000
Courage To Imagine...

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

Daniel Boorstin
Imagine the possibilities...

✔ if we could develop a deeper appreciation of “working together”, “learning together” and “thinking together”

✔ if we could ponder the opportunities for investment

✔ if we could act on these opportunities
Imagine the possibilities...

✓ and the markets we could create

Working Together
Investing Together
Designing Together
Building Together
Learning Together
Thinking Together
Leading Together