

# **InThinking About Quality**

## ***Better Thinking for the 21<sup>st</sup> Century***

*Presented by*

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ASQ Orange Empire Section

*Quality Day for the Community*

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Abstract: The aim of this session is to present a proposal for “better thinking about thinking” as it applies to quality. Thinking about thinking, or inthinking, is about a transformation of the ways people think. The organization of thinking itself and the awareness that there is a choice of alternative ways of thinking when creating better solutions, presents a significant and exciting departure from traditional approaches. This session will offer insights on how Dr. Genichi Taguchi’s ideas on “robust design” have been integrated with Dr. W. Edwards Deming’s “new economics” to establish both “InThinking” and “Enterprise Thinking”. In doing so, the presentation will offer an introduction to ongoing activities within Pratt & Whitney Rocketdyne to convert the unrealized potential embedded in the principles of Taguchi and Deming into practical ways that reduce losses to both society and Pratt & Whitney Rocketdyne.





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# Agenda

- Aim
- Rafting
- Quality
- Interchangeable Parts
- Better Thinking About Thinking
- Better Value
- Imagine the Possibilities...



# Aim

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

Dr. Genichi Taguchi



Dr. W. Edwards Deming



Dr. Edward de Bono

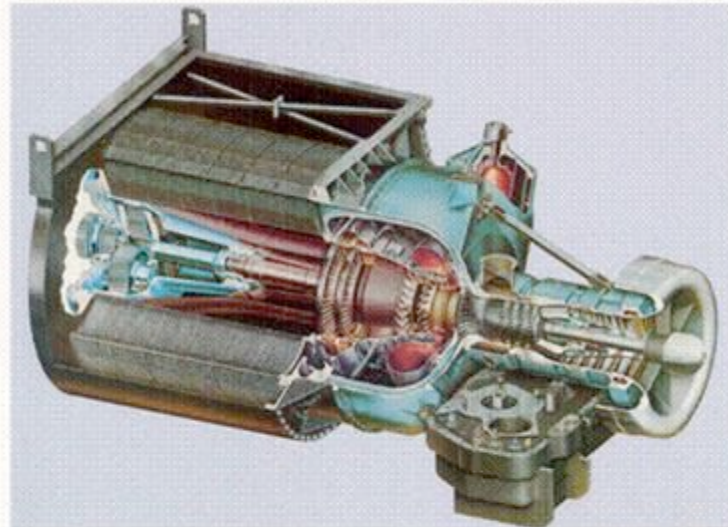


Dr. Russell Ackoff

and many others...



# Tank Engines and Rocket Engines



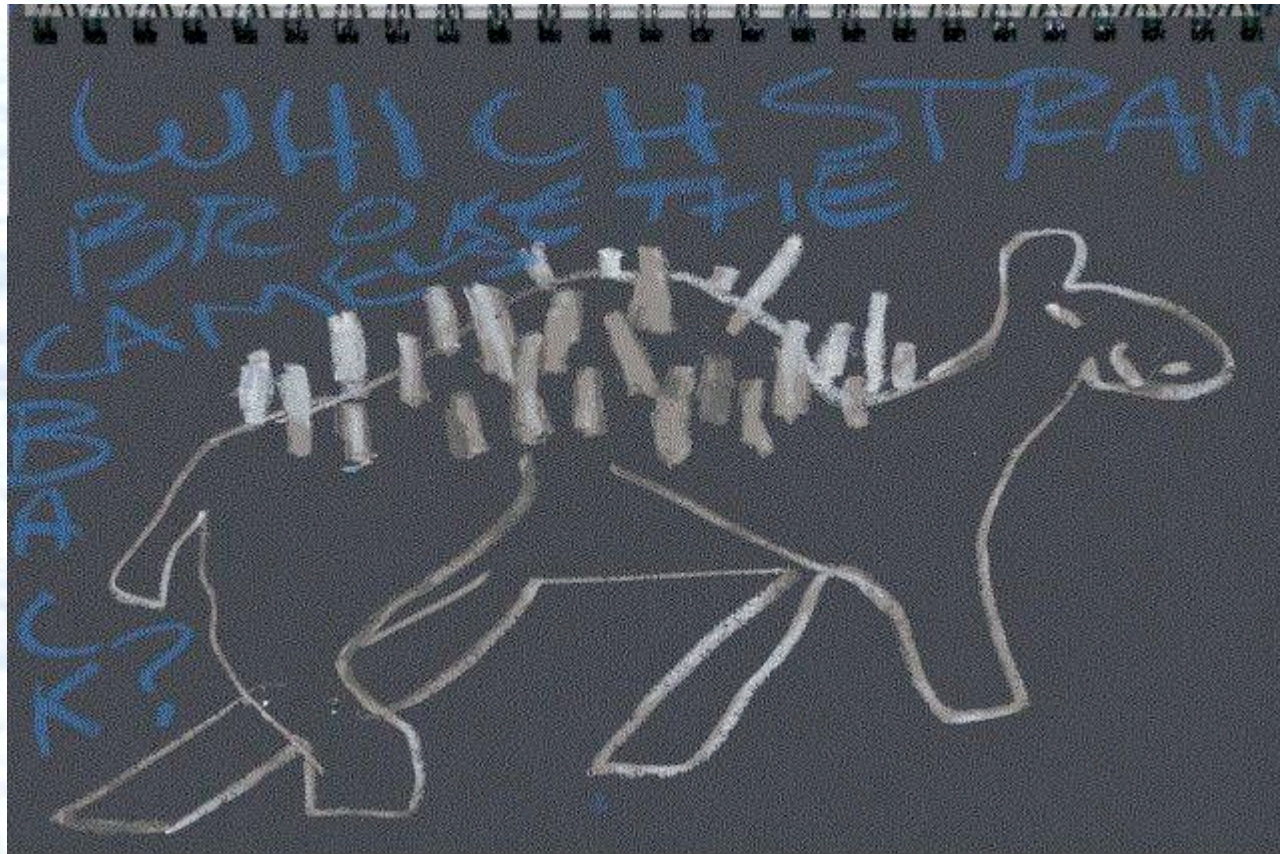
AGT 1500 GAS TURBINE ENGINE

**TEXTRON** Lycoming  
Stamford, Connecticut





# Counting Straws





# InThinking

InThinking is about a transformation of the ways people think into effective predetermined patterns and sequences of thinking. The organization of thinking itself and the awareness that there is a choice of alternative ways of thinking when creating better solutions, presents a significant and exciting departure from traditional approaches.





# InThinking & Enterprise Thinking





# 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 seeing systems
- ...about psychology
- ...about the utility of theories
- ...about managing resources



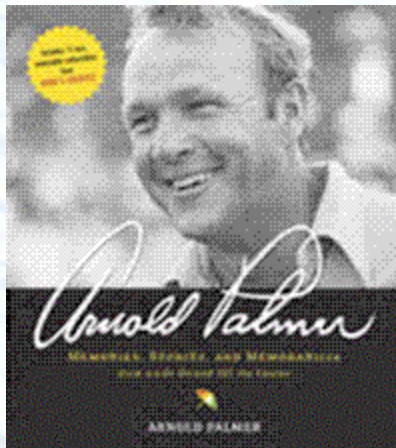




# Quality

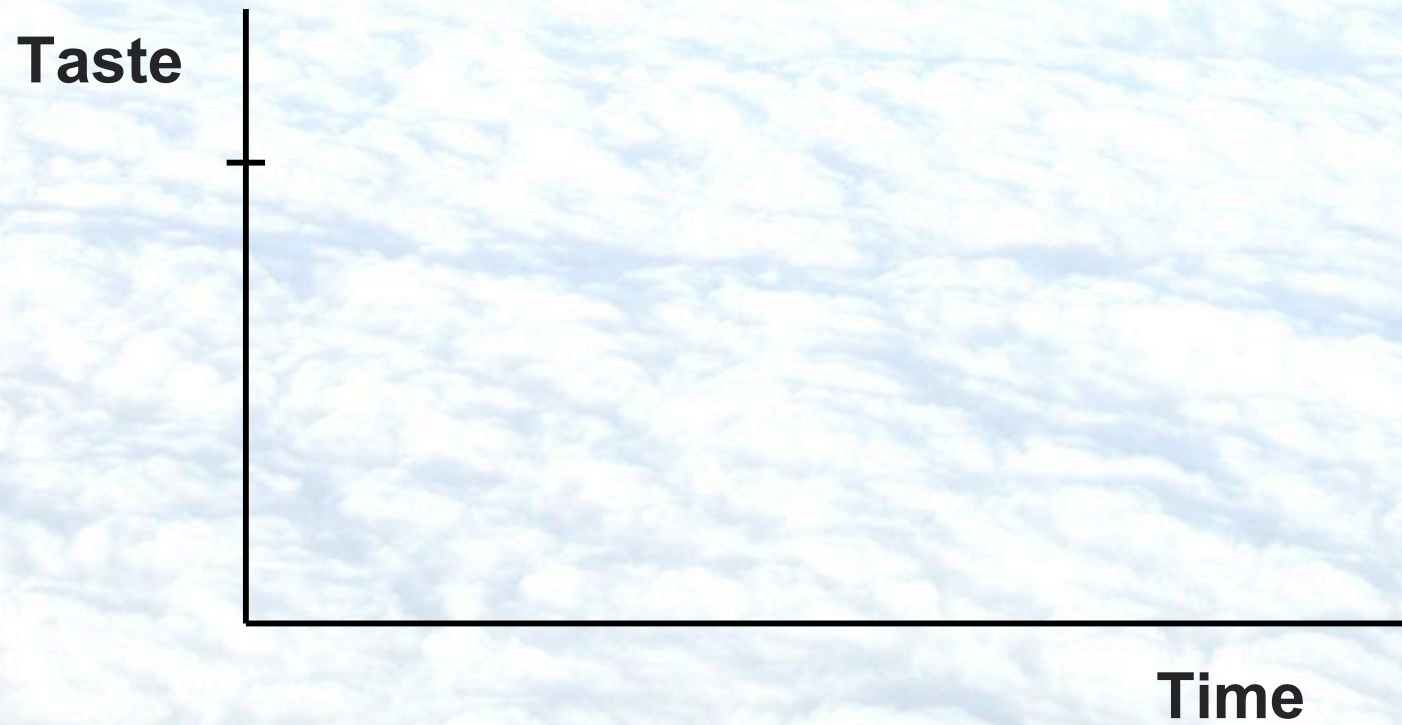


# Arnold Palmer





# Flavor of Pepsi





# Flavor of Pepsi





# W. E. Deming on Quality

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

Source: The New Economics, W. Edwards Deming, 1993



# 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 , G. Taguchi, 1983







# Edward de Bono on Quality

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

Edward de Bono



# 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, P. Crosby, 1989



# 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





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# Expectation Dynamics





# Expectation Dynamics





# Expectation Dynamics





# InThinking

InThinking is about a transformation of the ways people think into effective predetermined patterns and sequences of thinking. The organization of thinking itself and the awareness that there is a choice of alternative ways of thinking when creating better solutions, presents a significant and exciting departure from traditional approaches.

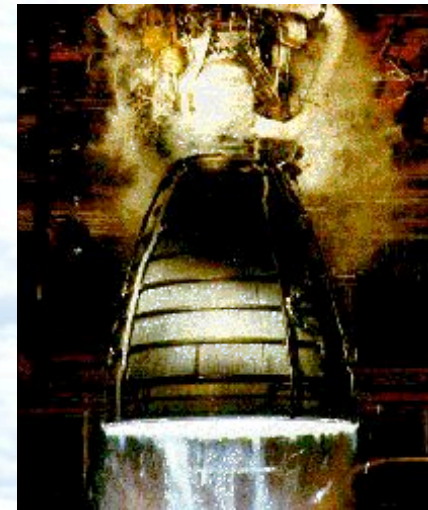
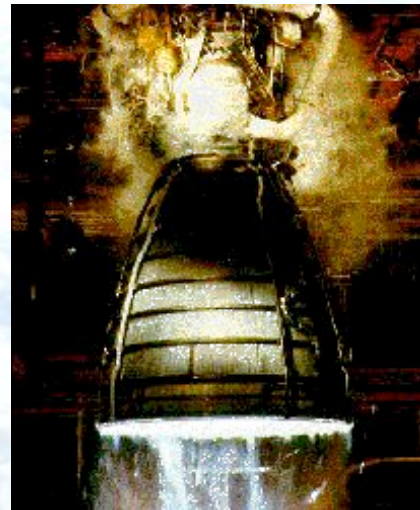
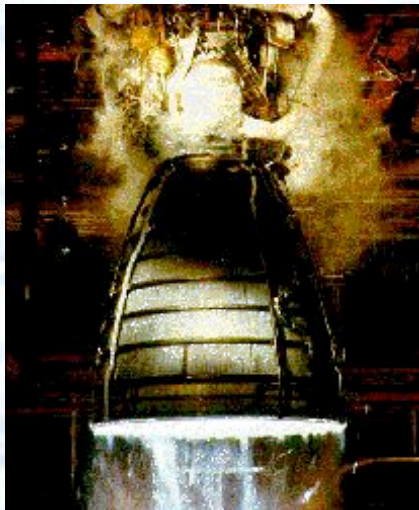




# **Interchangeable Parts**



# Interchangeable Parts ??



Space Shuttle Main Engine



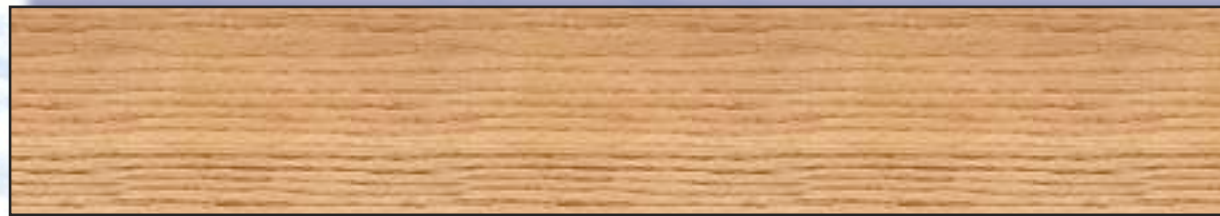
# Interchangeable Parts ??





# Cutting Wood

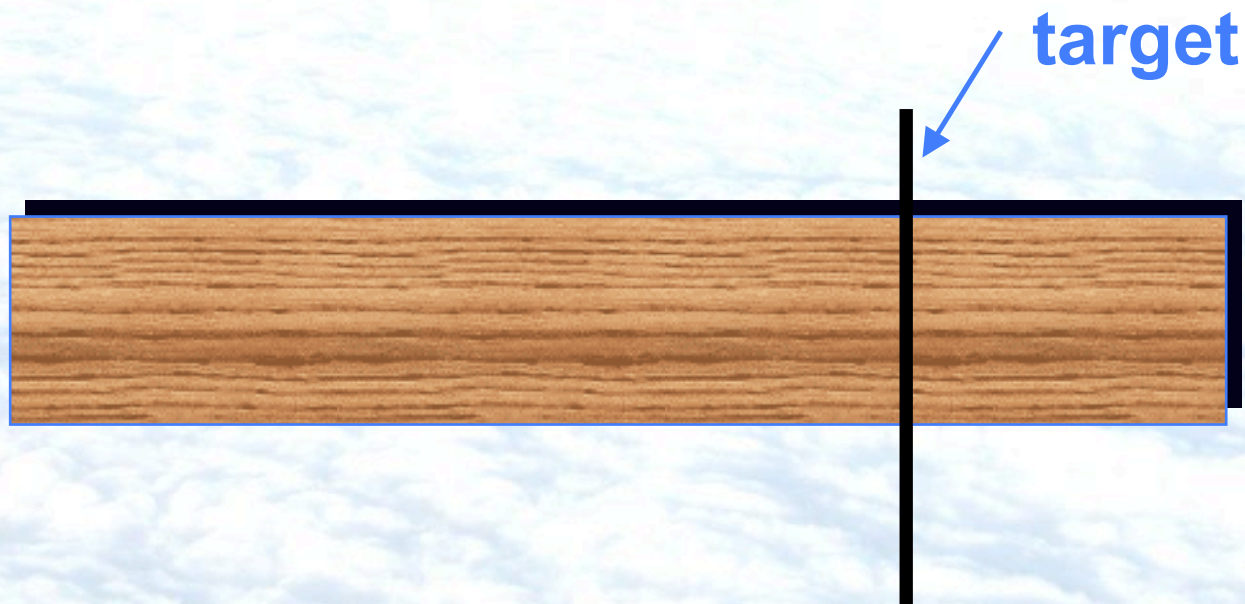
Given a piece of wood that will be cut  
into 2 pieces....



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

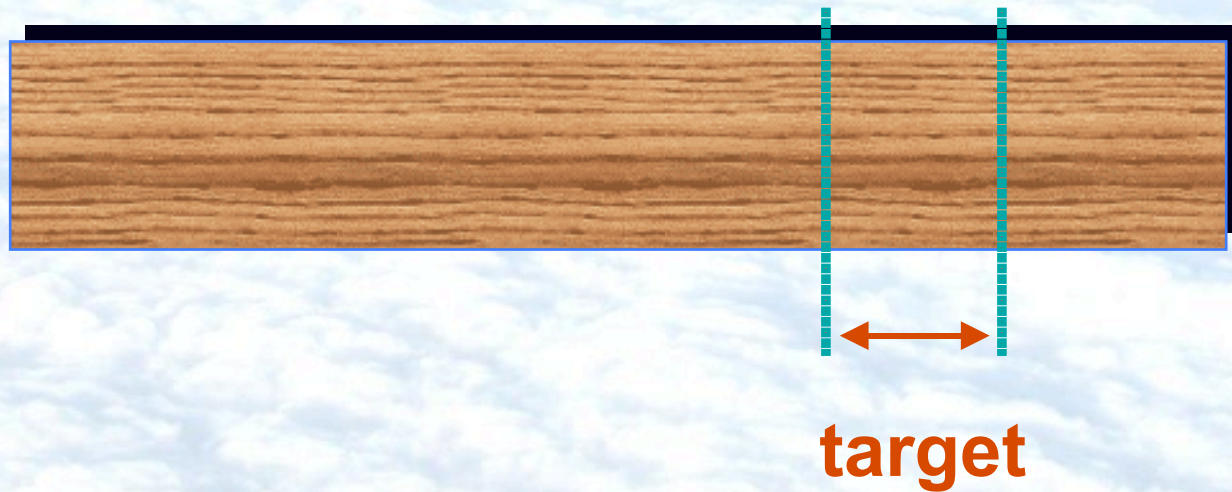


# Cutting Wood





# Cutting Wood





# Philip Crosby on Quality

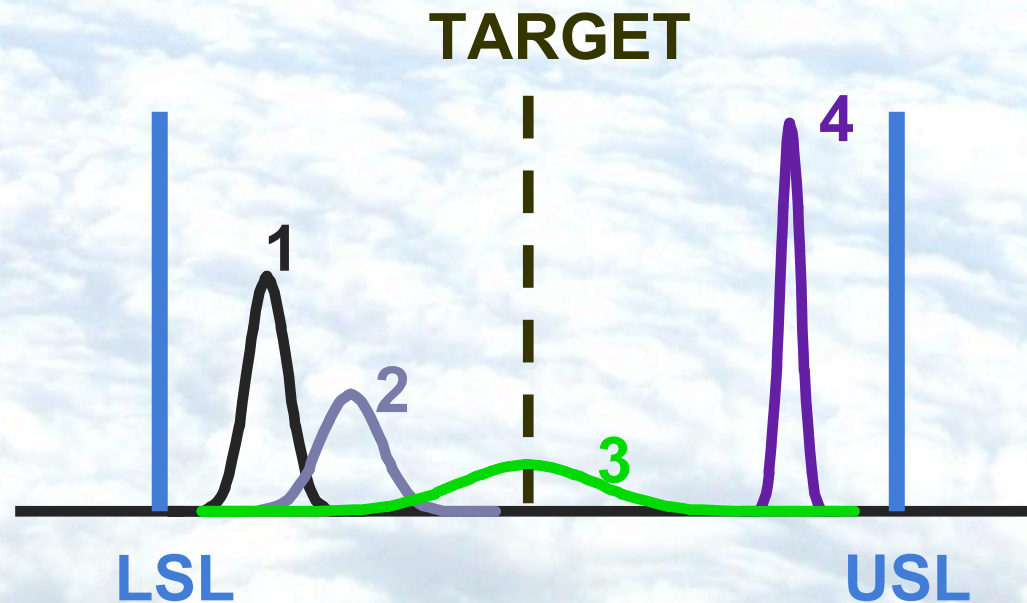
- “Zero defects is another way of saying ‘do it right the first time’”
- Quality is defined as conformance to requirements

Source: Let's Talk Quality, P. Crosby, 1989



# Decisions Decisions

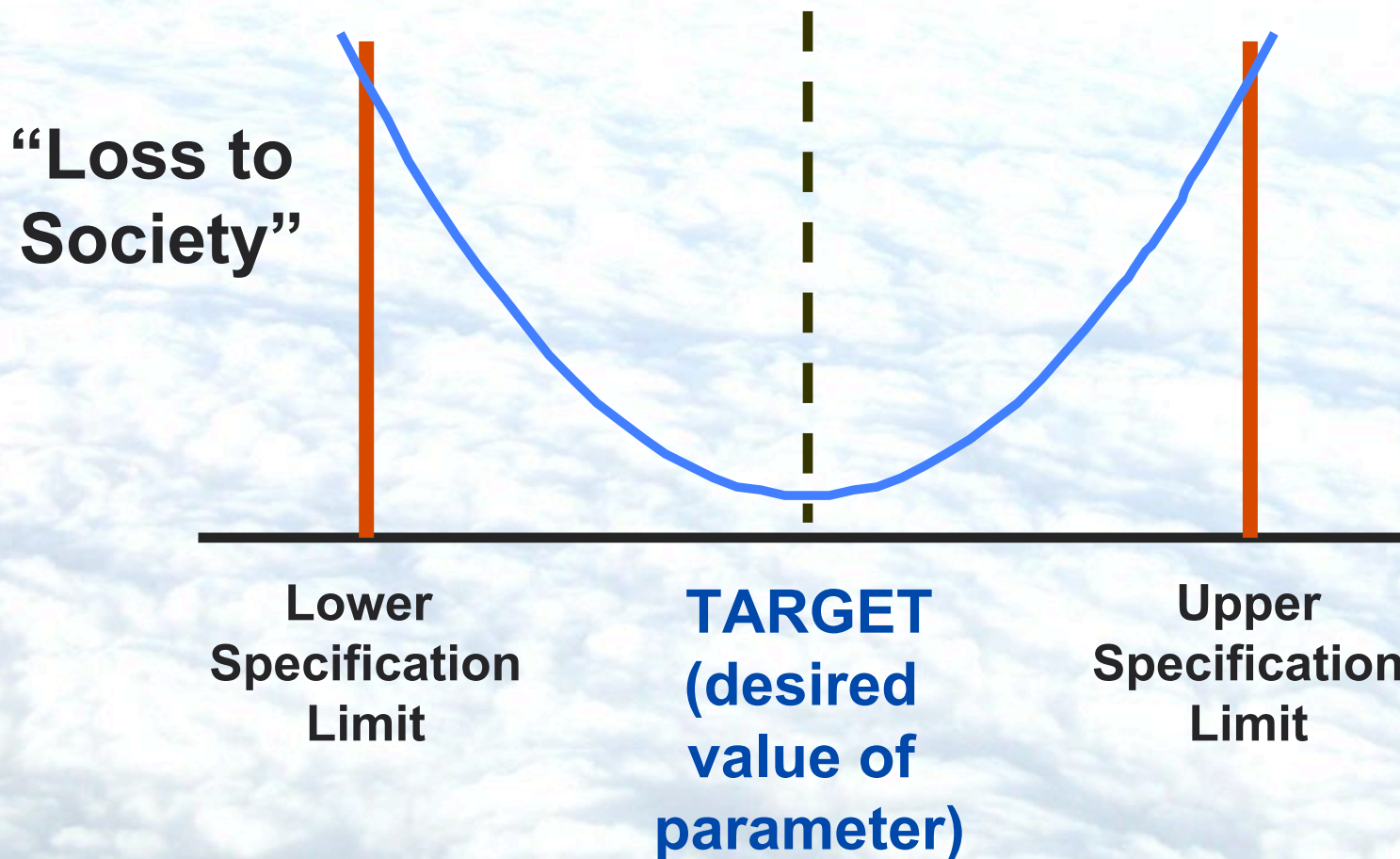
Background: Consider the following two processes and the specification limits and target provided.







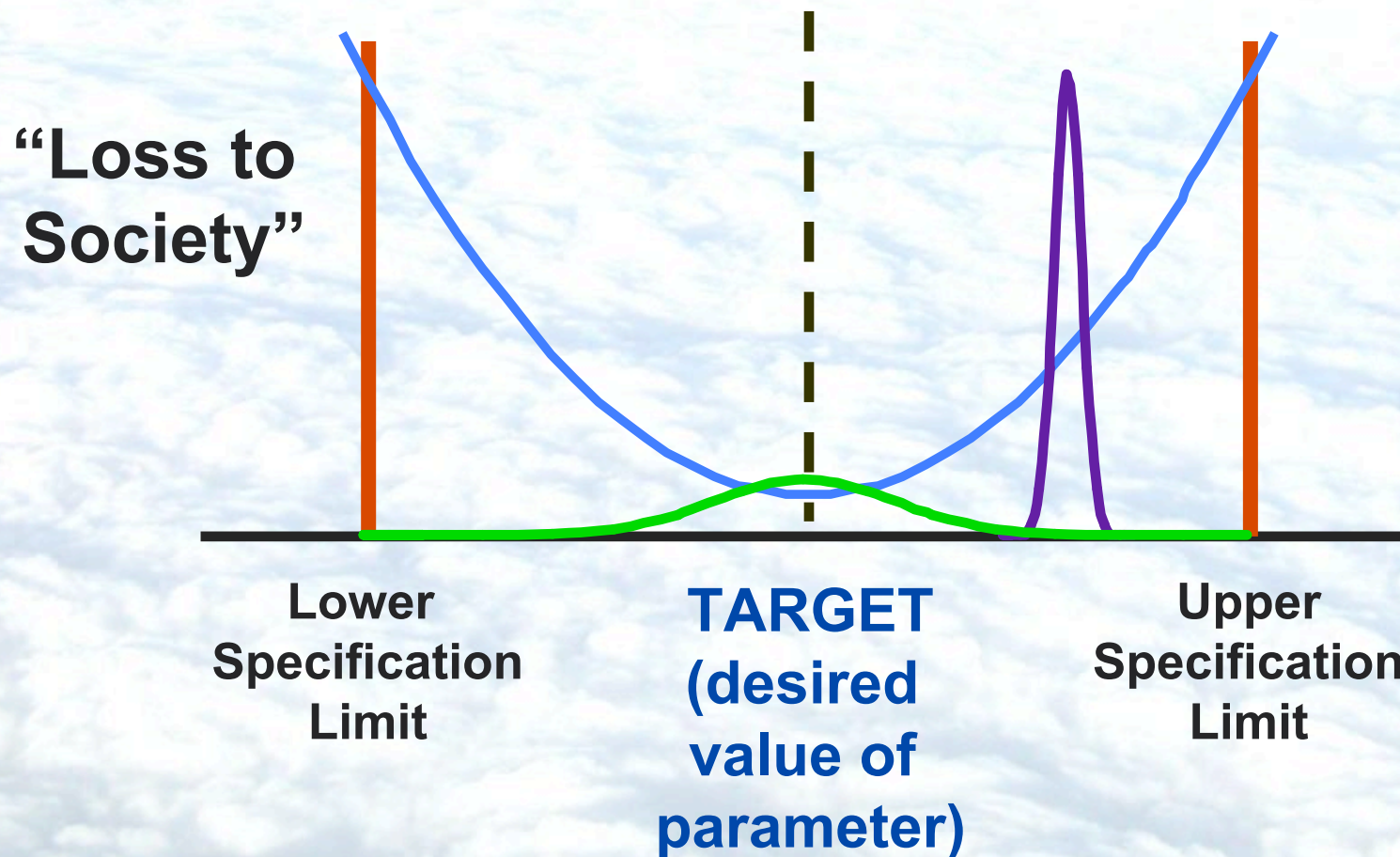
# Taguchi's Quality Loss Function







# Taguchi's Quality Loss Function





# 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



# Interchangeable Parts ??



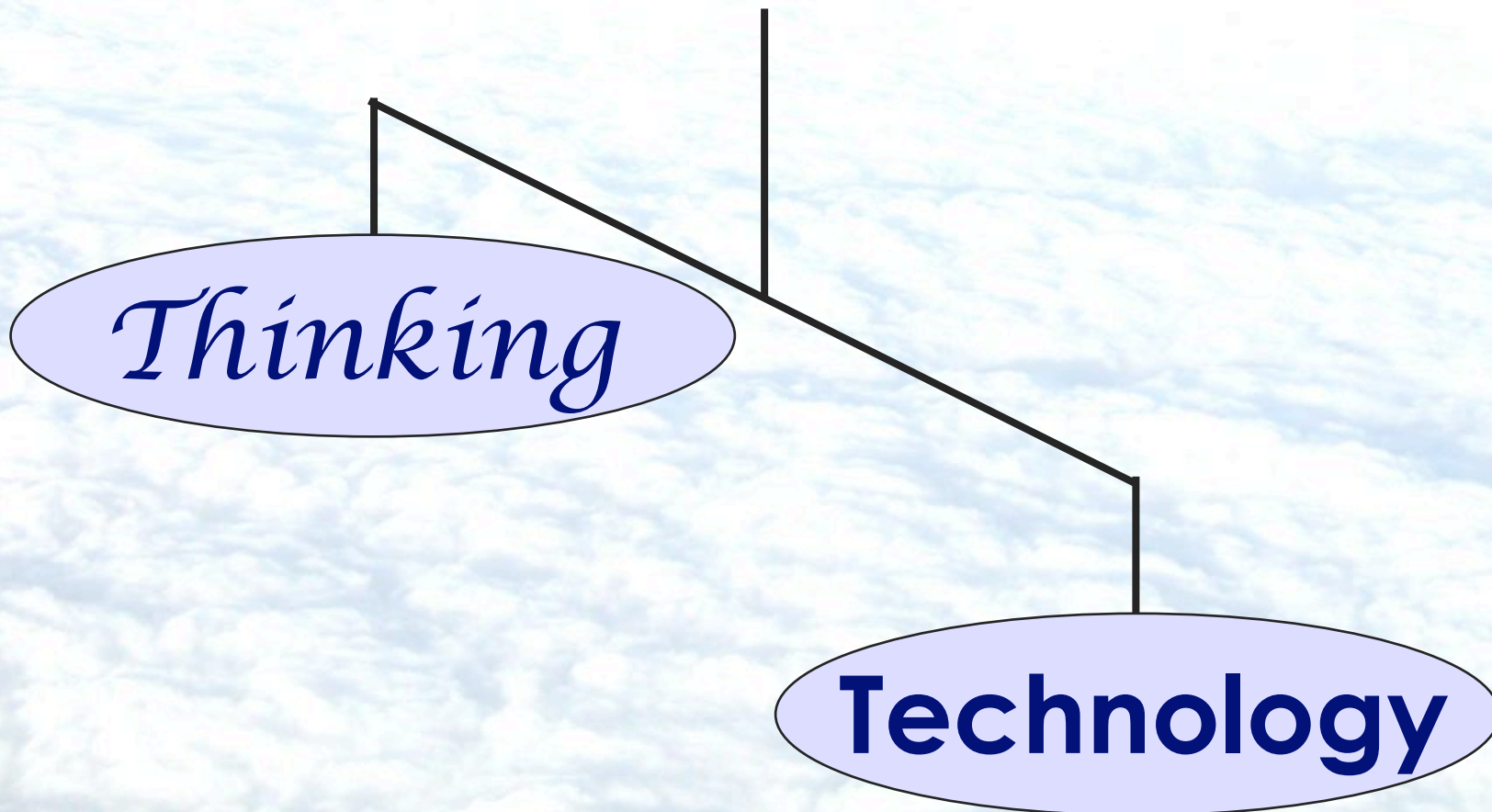




# **Better Thinking About Thinking**



# Investment Opportunities





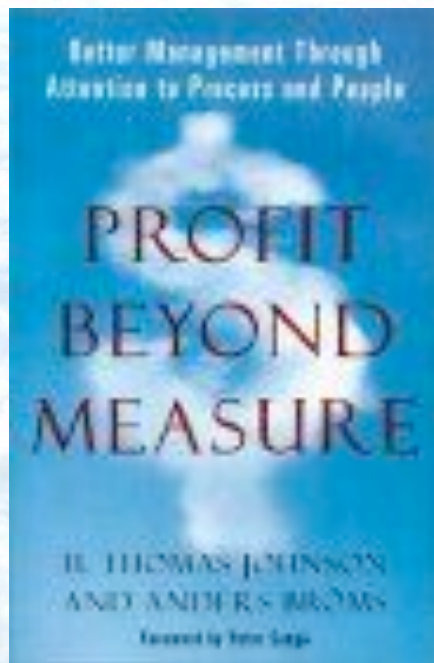
*“The significant problems we face cannot be solved at the same level of thinking we were at when we created them.”*

Albert Einstein





# Profit Beyond Measure



*This book is dedicated  
to the memory of  
Dr. W. Edwards Deming  
1900-1993*

*May the  
Seventh Generation  
after us know a  
world shaped by  
his thinking*



# 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



# Better Thinking...

## Using *Profound Knowledge*

- *See systems*
- *Appreciate psychology*
- *Acknowledge variation*
- *Develop a theory of knowledge*

Source: *The New Economics*, Dr. W. Edwards Deming



# The First Step

Once the individual understands the system of profound knowledge, he will apply its principles in every kind of relationship with other people. He will have a basis for judgment of his own decisions and for transformation of the organizations that he belongs to.

W. Edwards Deming

Source: *The New Economics*, W. Edwards Deming, 1993



# 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**



# 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



# 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



# The First Step

**The first step.** The first step is transformation of the individual. This transformation is discontinuous. It comes from understanding of the system of profound knowledge. The individual, transformed, will perceive new meaning to his life, to events, to numbers, to interactions between people.

W. Edwards Deming

Source: *The New Economics*, W. Edwards Deming, 1993



# 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



# Investment Thinking

- Seeing connections
- Spending \$ to save \$
- Spending time to save time
- Spending resources to save resources
- Examples
  - a stitch in time, an ounce of prevention, college education, roof repair, time with kids



**Picking Up Nails**

**Spending time (yours)  
to**

**Save time (others)**

***Minimizing Loss to  
Society***



# Transformation

Potential Energy  
*“Better Thinking”*

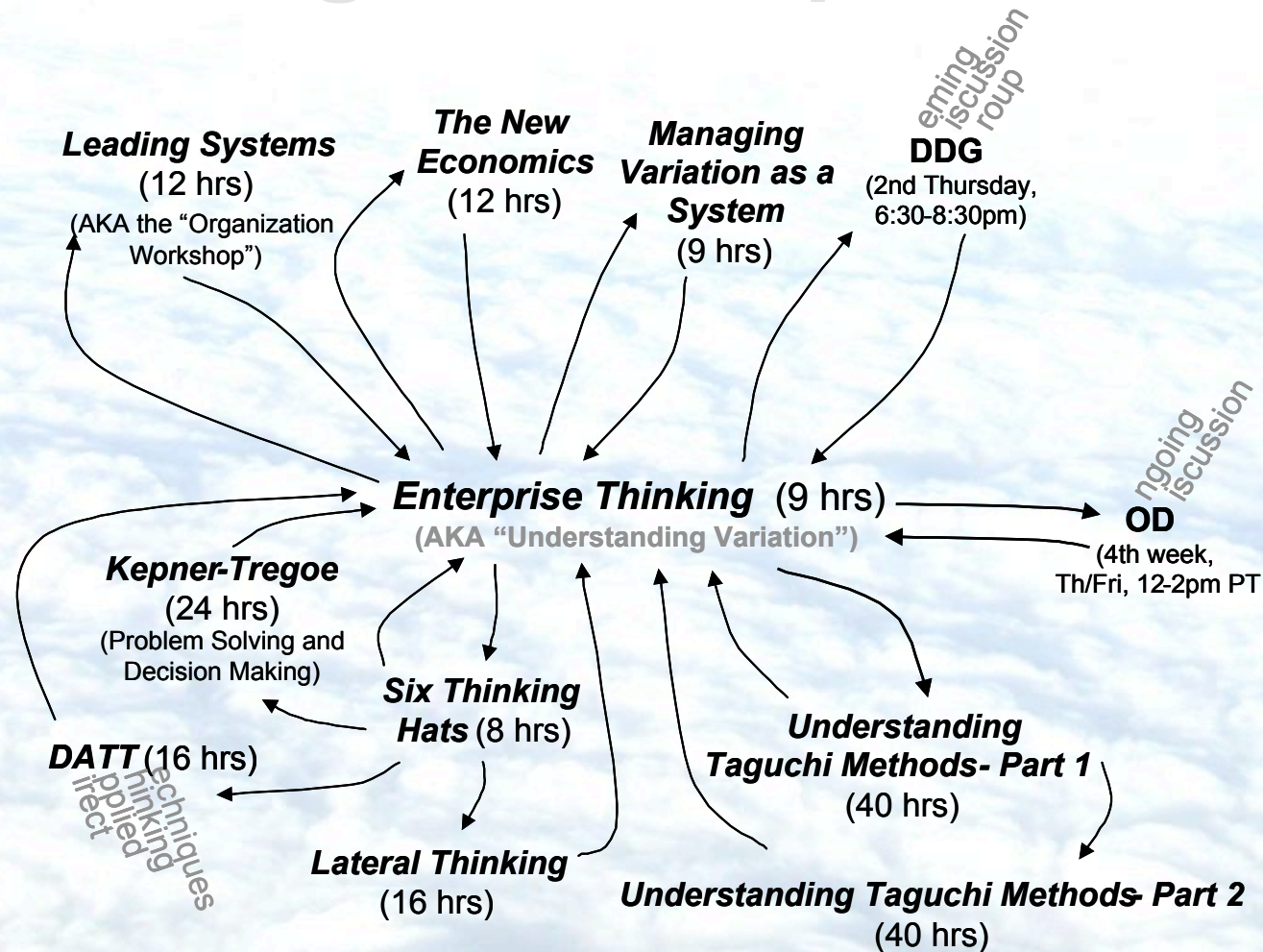


Kinetic Energy  
*“Better Value”*





# A Thinking Roadmap





# A Thinking Roadmap

**TARGET AUDIENCES:** *Members of management, individual contributors, suppliers, and customers who are providing leadership in "enterprise thinking" activities. Family members, "members of the community" and students are welcome to attend. "Members of the community" are citizens who are involved full or part time, or in a volunteer capacity, in community related work. Examples include hospital employees, teachers, religious leaders, scouting leaders, and youth sports volunteers.*



# A Day With Russell Ackoff



In addition to meeting with Genichi Taguchi and Edward de Bono, we have hosted Russell Ackoff. Since 2003, he is invited annually to present 1-day seminars in Canoga Park and Huntington Beach.



# A Day With Genichi Taguchi

Since the early 1990's, Dr. Taguchi has made regular visits to southern California to both consult and appear at conferences. These visits often included "One Day" seminars, which Boeing engineers have participated in on a routine basis. This photo was taken at the last workshop he offered in Los Angeles in 1999.





# A Day With Edward de Bono

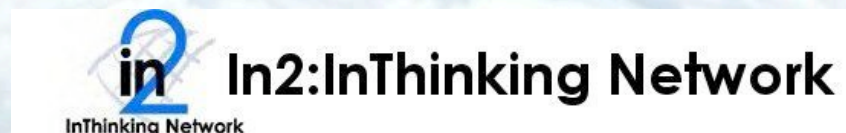
Regular meetings with Edward de Bono began in 1999.





# The In2:InThinking Network

The In2:InThinking Network was formed in 2001 by a group of students of the work of W. Edwards Deming and related theorists. The **aim of our network** is to make thinking about systems, variation, knowledge, and psychology, and their interaction – which comprises Deming's System of Profound Knowledge <sup>tm</sup> - more conscious. We believe that such thinking about thinking, which we call "inthinking," will allow people to better perceive relationships and interdependencies in human endeavors, and consequently act to make those endeavors more valuable, more satisfying, and more joyful.







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# In2:InThinking Network 2007 Forum:

“Passion Flowing In2 Purposeful Action –  
*Unleashing the Power of Us*”

**April 12 - 17, 2007 in Los Angeles, California**

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**Better Value**



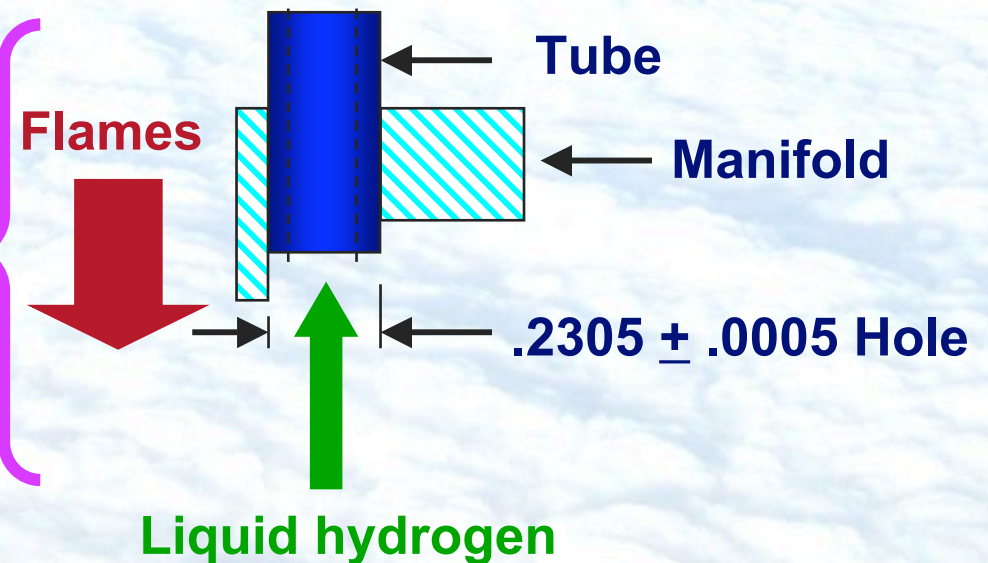
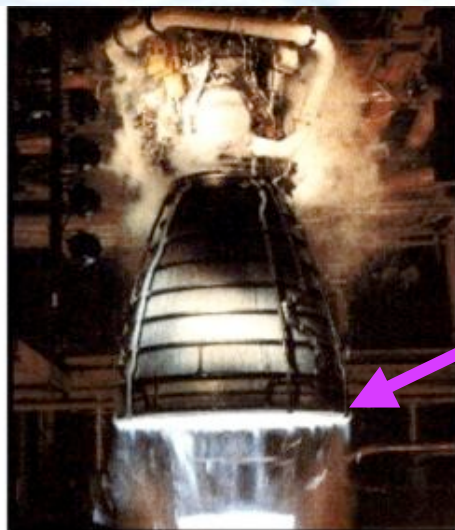
# Bridges





# Better Value – Tube Fit in Hole

Consider a tube fit into a hole





# Systems and Variation

**HOLE DIAMETER**



**PAGE COUNT**



**OUTER DIAMETER**



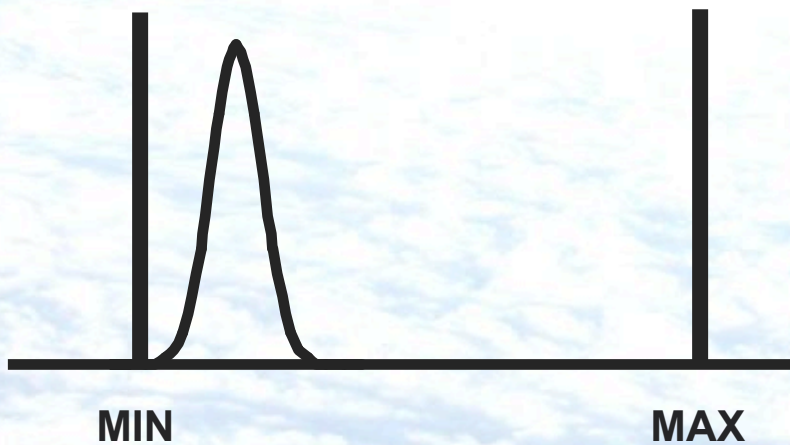
**ARRIVAL TIME**



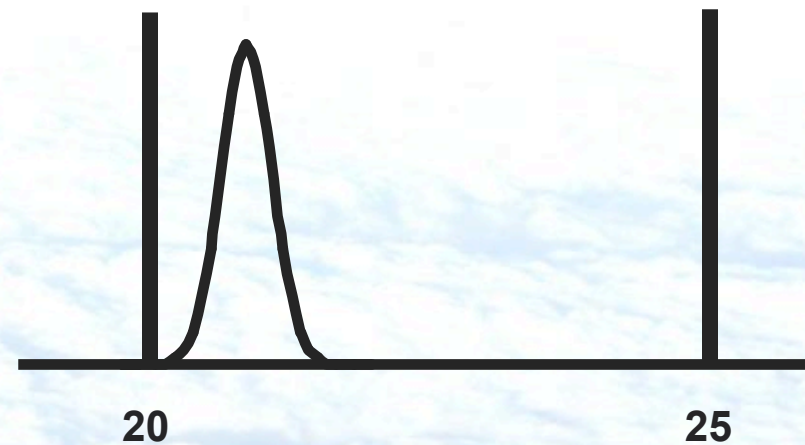


# Systems and Variation

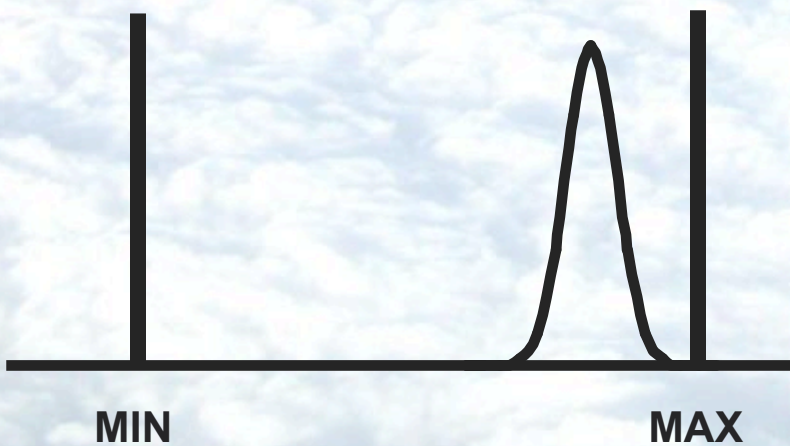
**HOLE DIAMETER**



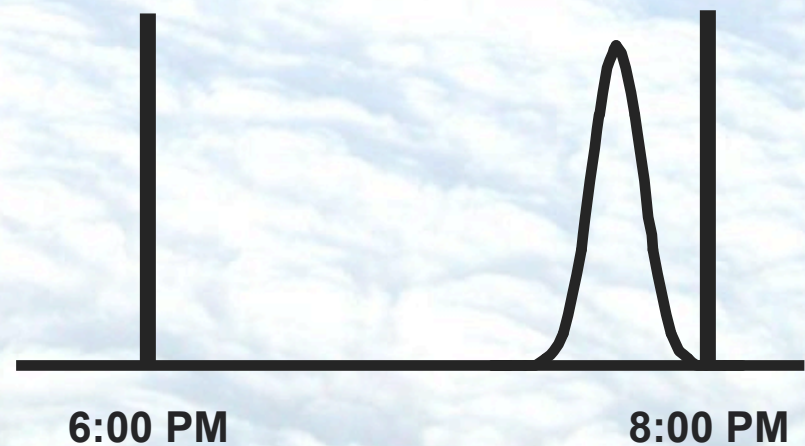
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**OUTER DIAMETER**



**ARRIVAL TIME**





# 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





# InThinking & Enterprise Thinking







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# 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?

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

William James