

# Enterprise Thinking (AKA UOS)

*Integrating Thinking and Action for the New Economy*

Part 1: \_\_\_\_\_

&

Part 2: \_\_\_\_\_

Presented by

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"A Thinking Roadmap"...@

<http://rdweb/tools&services/roadmap>

The In2:InThinking Network @

[www.in2in.org](http://www.in2in.org)

Discussion Group # \_\_\_

**Name:**

**Team:** 1 (Spades) 2 (Hearts) 3 (Diamonds) 4 (Clubs)

**Card(Role):** A(Leader) K("Odd" Driver) Q("Even" Driver)

J(Analyst) 10(Analyst) 9(Analyst) 8(Analyst)

07-0220

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## Seminar information

**TITLE:** *Enterprise Thinking - Integrating Thinking and Action for the New Economy*

**COURSE NUMBER:** *TQM #38*

**PROGRAM LENGTH:** *9 hours*

**MAXIMUM CLASS SIZE:** *35 students*

**PREREQUISITES:** *None*

**DESCRIPTION:** *This seminar explores the philosophies of a variety of management theorist, including but not limited to Russell Ackoff, W. Edwards Deming, Edward de Bono, Tom Johnson, and Genichi Taguchi, among many others; as they apply to the performance of products, processes, and the delivery of services. Among the topics of discussion will be the concepts of "better thinking about thinking" and "thinking together." The seminar will introduce you to these ideas through a series of questions that are specially selected to create awareness of a new approach to working together, learning together, and thinking together.*

**TARGET AUDIENCE:** *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. Thinking more broadly, anyone who is concerned about improving the effectiveness of individuals and organizations will gain from this seminar and leave with a new and deeper knowledge of the organizational environment, and connect to a growing network of participants across the U.S. and around the world. Past participants include individual contributors, teams, senior managers, managing directors, managers, engineers, designers, artists, graduate and undergraduate students, human resource professionals, secretaries, office administrators, purchasing agents, accountants, health care professionals, civic leaders, university deans, and professors.*

**BUSINESS ISSUE:** *Individual and group proficiency in the principles and examples of "thinking together" is fundamental to organizations that "work together, learn together, and think together." In the new economy, the proficient utilization of thinking will be a necessary condition; fundamental to business competitiveness. The aim of this seminar is to elevate the consciousness of individual and collective thinking about sub-systems, variation, knowledge, numbers, interactions and thinking patterns.*

**SEMINAR OBJECTIVE (Ability & Knowledge):** *At the completion of the seminar the participants should have the ability to better identify, characterize, and interpret the vision of seamless organizations, wherein working together follows from the ability to better learn together and think together. The objective of the workshop is to explore the potential of "Enterprise Thinking" organizations and to reveal the conversations of such environments.*

## Seminar information - continued

Stated another way, the objective of this 9-hour seminar (offered in 2 4.5-hour parts) is to explore the potential of "better thinking" directed toward continuous investment in our products and processes. In the new economy, the proficient utilization of thinking will be a necessary condition; fundamental to business competitiveness. The aim of *Enterprise Thinking* is to elevate the consciousness of individual and collective thinking about sub-systems, variation, knowledge, numbers, and interactions. Organizations that utilize *Enterprise Thinking* will benefit from thinking models selected and integrated to provide *inthink* solutions and enterprise actions. *Inthink* is a concept that explores the dynamics that exist with intentional interdependent thinking.

This course will review and explore past, present, and future thinking models. With this intent, the thinking of Edward De Bono, W. Edwards Deming, H. Thomas Johnson, Peter Senge, Genichi Taguchi, among others will be examined and associated in a new way.

Topics of discussion vary class to class. Current topics include...

Enterprise Thinking: An Introduction

Changing Consciousness: Thinking about Thinking

Working Together - Learning Together - Thinking Together

1-Line Thinking & 2-Line Thinking

Mechanistic Thinking & Holistic Thinking

Parallel Thinking

Red Pen and Blue Pen Companies

Water Logic and Rock Logic

Investment Thinking

Newtonian and Non-Newtonian Thinking

A Thinking Roadmap

*Inthinking*

The New Economics; A System of Profound Knowledge

Video: Ecological Thinking

Variation Reduction and Variation Management

Video: Illusions and Control

*Losses to Society* - Some Implications of Mechanistic Thinking

The Paradigms of Variation

Managing Variation as a System

Video: Mechanistic Thinking & Post-Industrial Management

The Future of Working Together, Learning Together, and Thinking Together

## Notes

***“I've tried to make those around me feel, as I do, that we are embarked as pioneers upon a new science and industry in which our problems are so new and unusual that it behooves no one to dismiss any novel idea with the statement that it "can't be done!" Our job is to keep everlastingly at research and experiment, to adapt our laboratories to production as soon as practicable, to let no new improvement in flying and flying equipment pass us by.”***

**Bill Boeing**

## Notes

***“We are being ruined by best efforts, not guided with profound knowledge.”***

**Dr. W. Edwards Deming**

## Notes

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

**Dr. Genichi Taguchi**



## Notes

***“Diversity is the art of independently working together.”***  
**Malcolm Forbes**

# Notes

***“Innovation is simply group intelligence having fun.”***  
**Michael Nolan**

## Notes

***“Great discoveries and achievements invariably involves the cooperation of many minds.”***  
**Alexander Graham Bell**

## Notes

***“There are precious few Einsteins among us. Most brilliance arises from ordinary people working together in extraordinary ways.”***

**Roger Von Oech**

## Notes

***“Never doubt that a small group of thoughtful committed people can change the world; indeed it is the only thing that ever has.”***

**Margaret Mead**

## Notes

***“Coming together is a beginning; keeping together is progress; working together is success.”***  
**Henry Ford**

## Notes

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

**Daniel Boorstin**

## Notes

*"It's not what the vision is that is important.....it's what the vision does"*  
Robert Fritz



## Notes

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

# Deming on “the first step”

## Chapter 4: A System of Profound Knowledge The New Economics Dr. W. Edwards Deming

**Aim of this chapter.** The prevailing style of management must undergo transformation. A system can not understand itself. The transformation requires a view from outside. The aim of this chapter is to provide an outside view - a lens - that I call a system of profound knowledge. The system of profound knowledge provides a lens. It provides a map of theory by which to understand the organizations that we work in.

**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.

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. The individual, once transformed, will:

Set an example

Be a good listener, but will not compromise

Continually teach other people

Help people to pull away from their current practice and beliefs and move into the new philosophy without a feeling of guilt about the past

**The outside view.** The layout of profound knowledge appears here in four parts, all related to each other:

- Appreciation for a system
- Knowledge about variation
- Theory of knowledge
- Psychology

One need not be eminent in any part nor in all four parts in order to understand it and apply it. The 14 points for management (*Out of the Crisis*, Ch. 2) in industry, education, and government follow naturally as application of this outside knowledge, for transformation from the present style of Western management to one of optimization.

# Deming's "14 points"

## Chapter 2: Principles for Transformation of Western Management

Out of the Crisis

Dr. W. Edwards Deming

- 1) Create constancy of purpose
- 2) Adopt the new philosophy
- 3) Cease dependence on inspection to achieve quality
- 4) End the practice of awarding business on price tag alone
- 5) Improve constantly and forever the system of production and service
- 6) Institute training on the job
- 7) Institute leadership
- 8) Drive out fear
- 9) Break down barriers between departments
- 10) Eliminate slogans, exhortations, and targets for the work
- 11a) Eliminate work standards
- 11b) Eliminate management by objective
- 12a) Remove barriers that rob the hourly worker of his right to pride of workmanship
- 12b) Remove barriers that rob people in management and in engineering of their right to pride of workmanship
- 13) Institute a vigorous program of education and self-improvement
- 14) Put everybody in the company to work to accomplish the transformation.  
The transformation is everybody's job

# Production Viewed As a System

## Chapter 3: Introduction to a System

The New Economics  
Dr. W. Edwards Deming

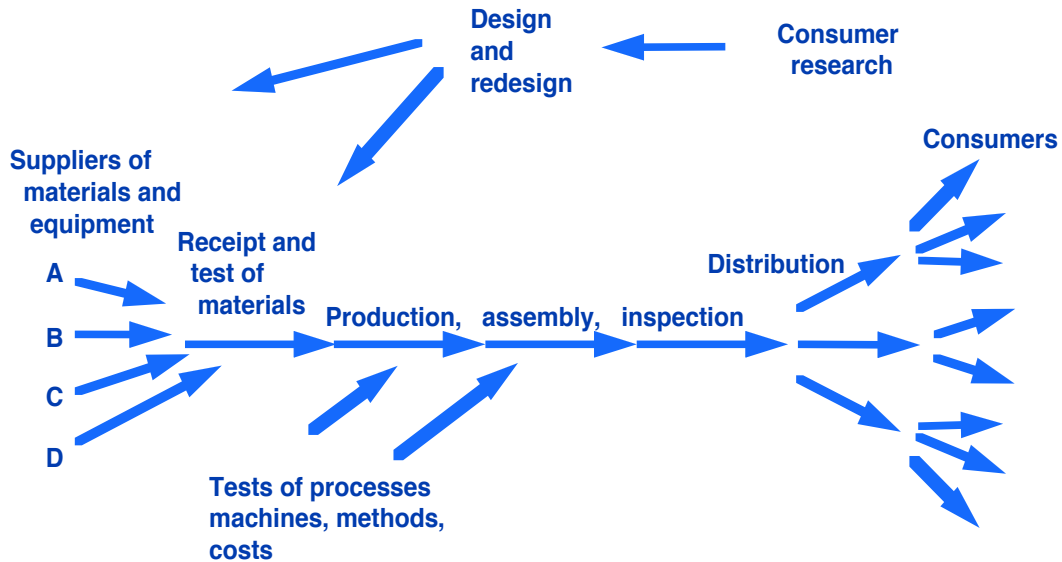


Chart first used by Dr. W. Edwards Deming in August 1950 in Japan

## Notes about control charts

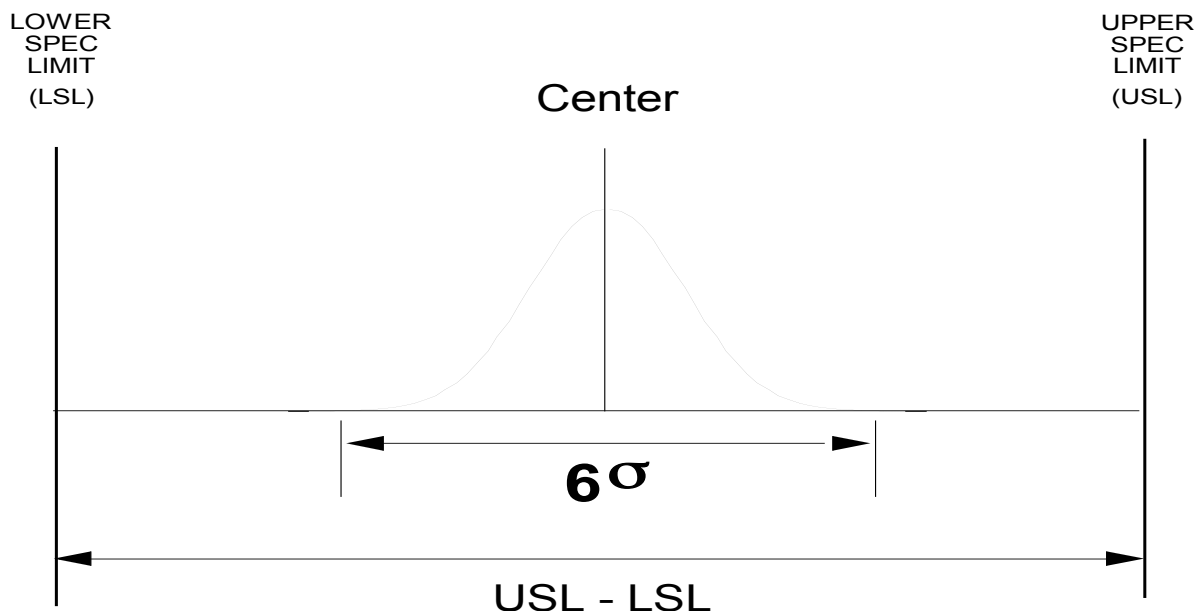
- 1) Control limits are used to recognize whether or not a process is stable (predictable), as opposed to being unstable (unpredictable).
- 2) Stable processes are said to be “in control”.
- 3) Unstable processes are said to be “out of control”.
- 4) The control limits for a process are not to be confused with “spec limits”.
- 5) The control limits for a process are said to define the “voice of the process”.
- 6) The spec limits for a process are said to define the “voice of the customer”.
- 7) A process can be “in spec”, and either “in control” or “out of control”.
- 8) A process which is “in spec” and “in control” is said to be “capable”.
- 9) A process which is “out of spec” and “in control” is said to be “not capable”.
- 10) The sources of variation for a process which is “in control” are said to be “common causes”.
- 11) The sources of variation for a process which is “out of control” are said to be “special causes”.
- 12) Special causes may be identified by data points outside of the control limits or by trends in the data (data to one side of average, data trending upward or downward, etc.). Rules on special causes are listed on Page 55 of the Memory Jogger.
- 13) According to Dr. W. Edwards Deming, 94% of variation is due to common causes and 6% is due to special causes.

## Process capability indices - $C_p$ and $C_{pk}$

Process capability,  $C_p$ , defined by the ratio of the distance between the specification limits (“voice of the customer”) divided by the distance between the control limits (“voice of the process”).  $C_p$  can be expressed by the equation:

$$C_p = (USL - LSL) / 6\sigma$$

where  $\sigma$  is the standard deviation of the process.



Although the distribution shown above is “centered” (average = mid point of the specification range), note that the equation for  $C_p$  is dependent only on the specification width (  $USL - LSL$  ) and process width (  $6\sigma$  ). As such, it does not depend on the location of the distribution.

## Process capability indices - $C_p$ and $C_{pk}$

As shown in a following reference table,  $C_p$  values are directly related to the probability of successfully “meeting specifications”. The higher the value of  $C_p$ , the higher the probability of “success”.

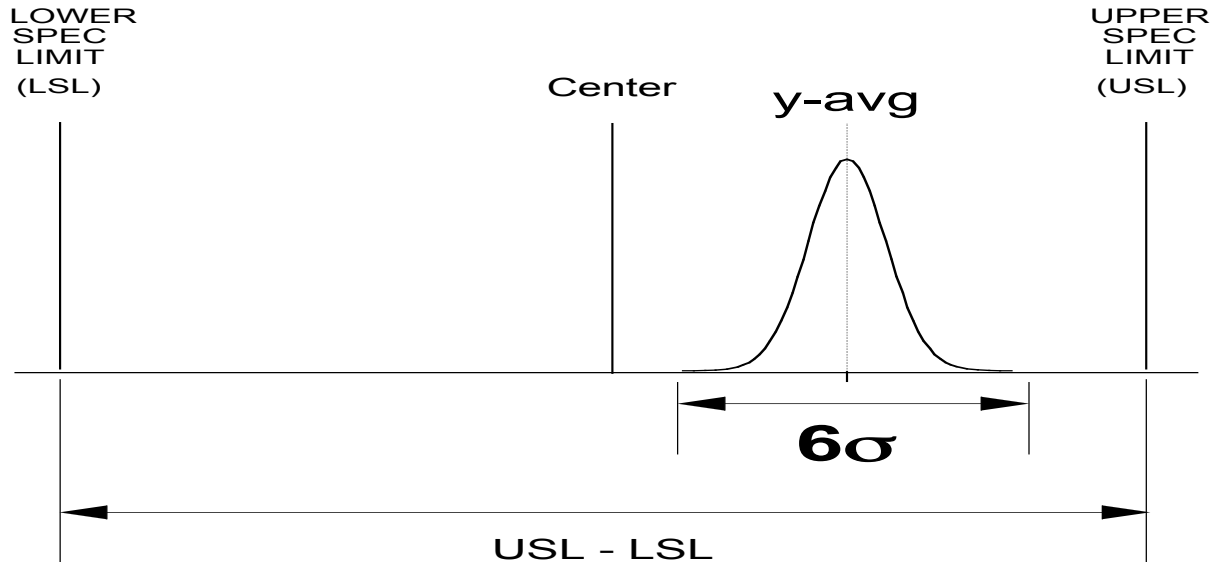
**$C_p$  Reference Table**

	*	**		*	**
$C_p$	Success (%)	DPM	$C_p$	Success (%)	DPM
0.33	68.26	317,400	1.33	99.9937	63
0.67	95.46	45,400	1.67	99.99994	0.6
1.00	99.73	2,700	2.00	99.99999	0.002

\* Probability of successfully meeting specification Limits (%)  
(percentages based on a “normal” distribution of results)

\*\* Defects per millions opportunities (DPM)

Next, consider the situation where the process distribution is positioned on the right side of the specification range, as in the figure below:



In this situation, process capability is defined by a calculation which takes into account the effect of the off-set of the process average from the center of the specification range.

## Process capability indices - $C_p$ and $C_{pk}$

Due to the process off-set, process capability ( $C_{pk}$ ) is defined in terms of the closeness of the process average ( $x_{avg}$ ) to both the upper and lower specification limits, in comparison to the half-width of the process distribution ( $3\sigma$ ). In this regard, process capability is defined by two additional values -  $C_{pu}$ , which defines capability relative to the upper specification limit, and  $C_{pl}$ , which defines capability relative to the lower specification limit. Given these two values for the capability of a process with an off-set,  $C_{pk}$ , is defined to be which ever value ( $C_{pu}$  or  $C_{pl}$ ) is smaller. The equations for  $C_{pu}$  and  $C_{pl}$  follow below:

$$C_{pu} = (USL - x_{avg}) / 3\sigma$$

$$C_{pl} = (x_{avg} - LSL) / 3\sigma$$

$$C_{pk} = \text{smaller value between } C_{pu} \text{ and } C_{pl}$$



## Reference Material

Upon completion of this seminar, a review of the following literature is recommended to provide further insight into the concepts of the paradigms of “acceptability and desirability” and the “system of profound knowledge” highlighted today.

### Books

Title: The New Economics

Author: W. Edwards Deming

Publisher: MIT Press

Title: Out of the Crisis

Author: W. Edwards Deming

Publisher: MIT Press

Title: Beating the System

Author: Russell Ackoff

Publisher: Berrett-Koehler

Title: Profit Beyond Measure

Authors: H. Thomas Johnson & A. Broms

Publisher: Free Press

Title: Six Thinking Hats

Authors: Edward de Bono

Publisher: Little Brown & Co.

### Videos

Source within Pratt & Whitney Rocketdyne: Cathy Robles (email at [cathy.robles@pwr.utc.com](mailto:cathy.robles@pwr.utc.com) or by phone at 818-586-2175)

Title: “Deming Speaks to Educators”, 1992

Title: “A Day with Russell Ackoff” (2003, 2004, 2005)

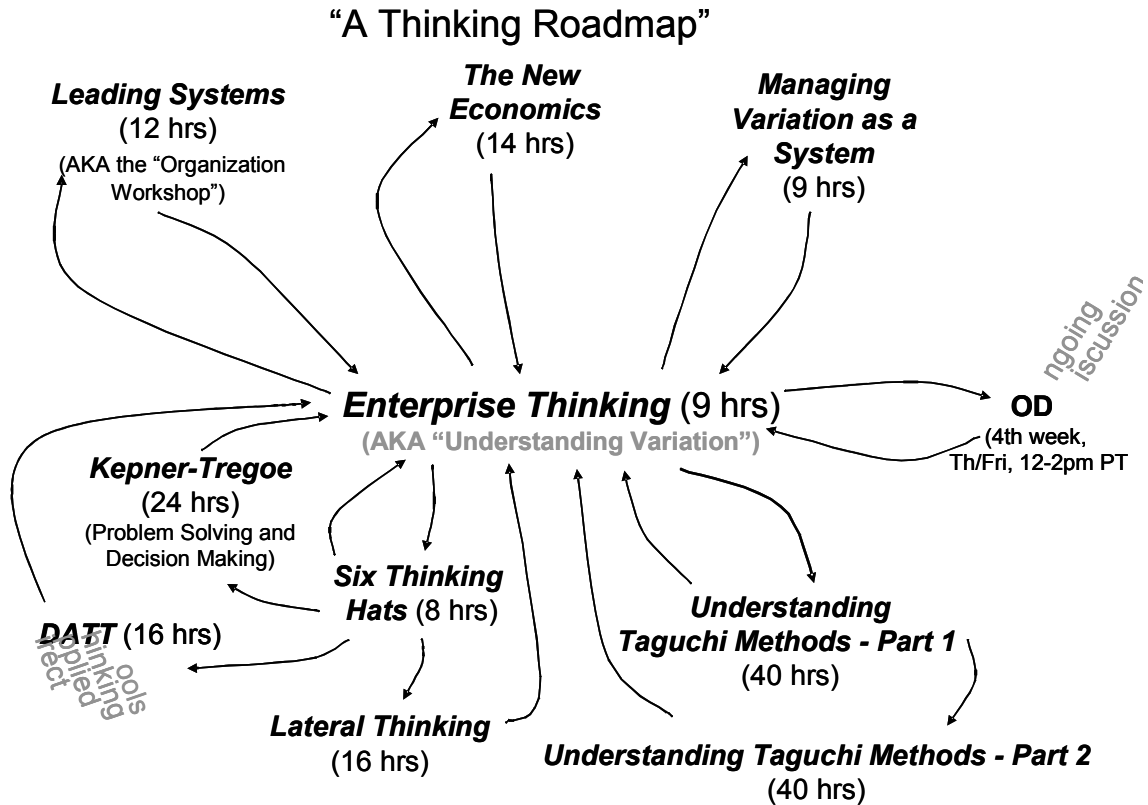
Title: “Shifting the Focus to Achieve Landmark Results: *Managing by Means*”, with Tom and Elaine Johnson, 2004

Title: The Fifth Discipline, Peter Senge at the 1999 “Teaching for Intelligence” Conference

Order information: [www.skylightedu.com](http://www.skylightedu.com), phone: 800-348-4474, item # 1792, ISBN: 1575171724, unit price: \$99

# A Thinking Roadmap

Upon completion of this seminar, the available “next steps” from the “Thinking Roadmap” are listed below. The sequence of seminars is presented to show the sequence of “pre-requisites”.



# A Thinking Roadmap - continued

Seminar/Activity	Total length (hours)	# of Sessions	Hours per session	Prerequisites	Description	Schedule (all times are PT)	Fee
Enterprise Thinking ("ET", formerly known as Understanding Variation)	9	2	4.5	none	An introduction to investment thinking, Red and Blue Pen Companies, water and rock logic, and 1-line and 2-line thinking, and the management theory of W. Edwards Deming.	Morning sessions generally run from 7-11:30am, afternoon sessions generally run from 12-4:30pm	free
Managing Variation as a System ("MVS")	12	3	4	ET within 12-14 months	An introduction to the fundamentals of managing common cause and special variation.	Morning sessions run from 8-11am, afternoon sessions run from 1-4pm, evening sessions run from 4-7pm	free
Six Thinking Hats ("Hats")	8	1	8	ET within 12-14 months	Managing six thinking styles (feelings, caution, benefits, creativity, information collection, and thinking about thinking), as defined by Edward de Bono.	Class starts at 7:30am and ends at 4pm	\$165
Lateral Thinking ("Lats")	16	2	8	Six Hats	An extended look at the creative thinking techniques of Edward de Bono.	Class starts at 7:30am and ends at 4:30pm	\$110
Direct Applied Thinking Tools ("DATT")	16	2	8	Six Hats	An extended look at the parallel thinking techniques of Edward de Bono.	Class starts at 7:30am and ends at 4:30pm	\$60
Problem Solving and Decision Making ("Kepner-Tregoe")	24	3	8	ET within 12-14 months	Problem Solving, Decision Making, Potential Problem Solving, Potential Opportunity Analysis, and Situational Appraisal, as defined by Charles Kepner and Benjamin Tregoe.	Class starts at 7:30am and ends at 4:30pm	\$330
The New Economics Study Session	12	6	2	ET within 12-14 months	A chapter-by-chapter discussion of Deming's book, The New Economics.	Sessions run in 3 time slots: 7-9am, 11-1pm, 4-6pm, meeting twice a week.	free
Leading Systems (also known as the Organization Workshop)	12	2	"8/4"	ET within 12-14 months	An introduction to the organizational dynamics of hierarchical organizations, as defined by Barry Oshry.	The first day is an 8-hour session, running from 8am until 4:30pm. Day two runs from 8am until noon.	free
Understanding Taguchi Methods - part 1 (UTM1)	40	10	4	ET within 12-14 months	An introduction to the variation management philosophies and strategies of Genichi Taguchi.	Sessions run from 7-11am	free
Understanding Taguchi Methods - part 2 (UTM2)	40	10	4	ET within 12-14 months, UTM1	An extended look at the variation management philosophies and strategies of Genichi Taguchi.	Sessions run from 7-11am	free
Ongoing Discussions ("OD")	4	4	1	none	These monthly one-hour telecon sessions are provided as a means to extend the discussions presented in the Enterprise Thinking class into actions (and integration) as well as a deeper appreciation of "better thinking". Participants include sites across PWR as well as non-PWR employees.	Sessions run during the fourth week of every month, on Thursday and Friday afternoons. Two options are provided on each day; 12-1pm or 1-2pm (PT). The host site is Canoga Park. Telecon numbers are provided to participants within and outside of PWR.	free

