



Nth Degree Software, Inc.

“technology to amplify natural human thinking and enhance collective intelligence.”

The Need for Facilitated Thinking Environments (FTEs)

“helping knowledge-workers become better thinkers”

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WHITE PAPER

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1. Why Facilitate Thinking?

“The most important contribution of management in the 20th century was to increase manual worker productivity fifty-fold. The most important contribution of management in the 21st century will be to increase knowledge worker productivity – hopefully by the same percentage.”

Peter F. Drucker

“More than ever before, innovation is essential to growth ... even survival”

Joe W. Forehand, Chairman & CEO – Accenture

“Skilled people become the only sustainable competitive advantage.”

Lester Thurow

No matter where you look, organizations from schools to the largest conglomerates face the same challenge: How can worker performance be improved? It is clear that the winners will be those organizations responsive enough to profit from change by applying innovative thinking often enough, fast enough, and well enough to create competitive advantages.

Workers now need to be reactive thinkers who can respond to any change in the marketplace, competitive situations, or employee opportunities. They must simultaneously be pro-active thinkers who can take advantage of situations through anticipation and preparative steps which can be immediately activated when the situation demands.

Developing a high-performance and “change adept” workforce requires creating the environment and putting in place the tools, practices and procedures that improve knowledge worker thinking productivity. This paper describes how to improve workforce thinking productivity through the development of *Facilitated Thinking Environments* (FTEs). FTEs deliver the right thinking tools and strategies needed to fully unlock the potential and productivity of human thought.

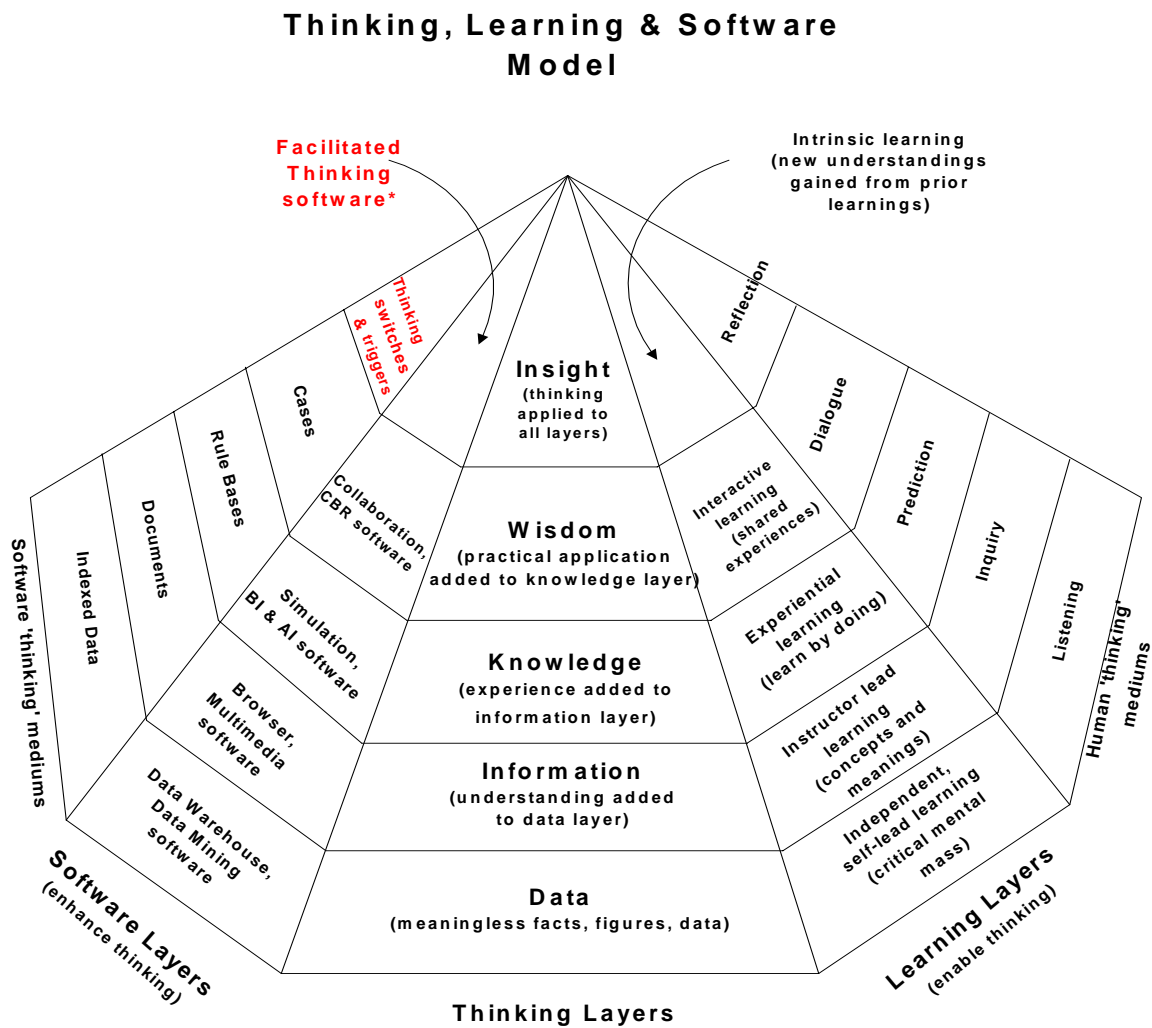
It is productive human thinking that enables an organization to create sustainable competitive advantages from a skilled and motivated workforce.

2. Evolution of Software Technology & Thinking.

The evolution of computer technology presents new opportunities to enhance human thinking like no other time in history. The following *Thinking, Learning & Software Model* provides the guiding principles that lead to the development of *Facilitated Thinking* software.

Facilitated Thinking is the process of providing thinking assistance that supports and amplifies human thinking to arrive at better and more complete ideas in a rapid fashion. *Facilitated Thinking* is based on the premise that intelligence can be aided and thinking can be improved when multiple-technique based thinking strategies and tools are utilized.

What is the difference between Learning & Thinking? Learning is the process of acquiring masses of data, information and knowledge around which effective thinking can occur. Thinking involves the application of thought processes and mental switches/tools upon learned data/information to produce new understandings or develop new ideas and concepts.



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* MindSights™

In summary, the model constructs different *thinking layers*, and builds upon these layers to show how humans think and acquire understanding, and demonstrates how technology can improve human thinking along the way.

It starts at the lowest layer of raw *data*, which becomes *information* as meaning is added to data. As experience is added to information it becomes *knowledge*, growing to *wisdom* when practical application is added to that knowledge. The highest thinking layer is *insight*, where innovative *Facilitated Thinking* software (switches/triggers/tools) can be applied to arrive at new ideas, solutions and concepts that otherwise would not have occurred.

3. Concept of Facilitated Thinking Environments (FTEs).

Facilitated Thinking is a process that improves knowledge-worker *thinking productivity* in similar ways that the invention of the assembly line improved manual-worker *labor productivity*. With a just-in-time approach, a *Facilitate Thinking Environment* delivers within a precise thought process the right questions to ask, the correct thinking tools to use, and the proper thinking methods to enhance personal or team thinking performance.

Just as the manual-worker's productivity depends on using the right tools, thought-workers need the right cognitive tools. Employing the right cognitive tools for knowledge-workers requires tools that enhance awareness, promote new methods of thinking, speed the thought process and response time, and get results in terms of predictable actions.

The choice of using thinking methods and tools should be based on the same principle that underlies the selection of any tool: choose one appropriate for the task at hand.

4. How FTEs work.

Facilitated Thinking Environments empower worker thinking. While we all have the ability to think in different patterns, our minds are optimized to use dominant and repetitive thinking patterns. Generally, these dominant thinking patterns are acquired from education, work and life experiences. We all use these experiences (patterns) stored in our memory as a guide for how to proceed. The danger, however, in always using these same thinking patterns is that the pattern doesn't always fit the thinking task at hand. Thus, the "box or rut" is created from which we are continuously urged to "think-out-of."

Using the wrong thinking strategies and tools results in unproductive thinking performance. FTEs are designed to break scripted mental patterns by prompting users to react to *thought switches*. Instead of just searching the mind for routine solutions, these *thought switches* promote different thinking patterns that result in the development of new ideas and solutions.

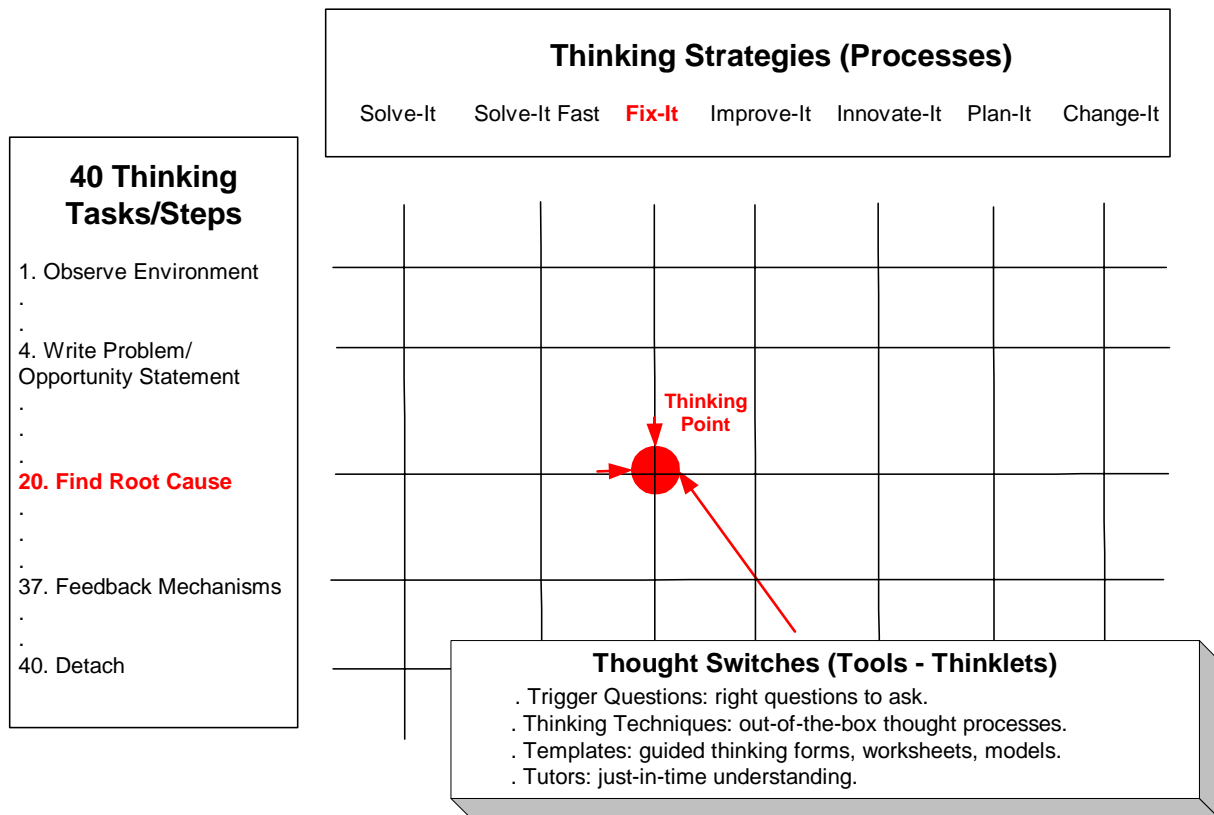
Please note: *Facilitated Thinking Environments* are not a substitute for human thinking. In contrast to Artificial Intelligence/Expert Systems that attempt to automate thought, *Facilitated Thinking Environments* support and amplify natural human thought. Creating these environments makes the average worker good, the good become excellent, and the excellent can attain exceptional levels of new thinking. Even Einstein had his circle of colleagues who served as his ... *Facilitated Thinking Environment*.

5. Thinking Emulation Grid™ – The Heart of the FTE.

The following *Thinking Emulation Grid*™ essentially duplicates (emulates) how a human facilitator functions when providing intellectual guidance. The grid identifies the major *thinking points* and cognition resources (*thought switches*) needed to effectively think at each one of the thinking points.

This *Thinking Emulation Grid* is the heart of a *Facilitated Thinking Environment*. The grid organizes all of the thinking components into a smoothly coordinated and integrated environment to guide thinkers along specific thought pathways and processes (*thinking strategies + thinking tasks/steps*) where just-in-time delivery of the right tools (*thought switches*) stimulate ideas within the right context.

Facilitated Thinking Environment (FTE) Thinking Emulation Grid



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Thinking Strategies

Many people believe it makes little difference which problem-solving or thinking-process people are trained to use, or comfortable by habit in using, as long as it is systematic. *Not true!* Using the wrong thinking strategy or process will unproductively shape thinking performance.

Thinking Strategies are the mental structures or frameworks (practices, processes or procedures) in which thought occurs. Like a human facilitator, these strategies guide thinking with the goal of helping people focus on what is important, and, prompting them on how to think through situations more creatively and effectively. *Facilitated Thinking Environments* recognize, however, that every problem, person and situation is unique and consequently different levels and types of thinking strategies are required.

Correctly identifying the type of *thinking situation* is the critical first step for effective thinking. Proper identification is vital because different *thinking strategies* are needed depending on the situation you are trying to address or resolve.

Standard FTE Thinking Strategies	Thinking Strategies are process-oriented and guide thinking for the following types Thinking Situations: I need the right Thinking Strategy for:
Fix-It	<i>Corrective thinking</i> to restore something to an original, past or standard condition.
Improve-It	<i>Improvement thinking</i> to make current levels of performance better (Six-sigma oriented).
Innovate-It	<i>Creative thinking</i> to develop something new and of value that never existed before.
Plan-It	<i>Thinking</i> that anticipates and prepares for future opportunities or problems.
Solve-It	A <i>thinking strategy</i> to resolve complex problems, issues or challenges.
Solve-It: Fast	<i>Thinking</i> to quickly resolve urgent situations or conditions.
Change-It	Personal <i>thinking strategy</i> to master life's constant challenges and change (Coaching oriented).

40 Thinking Tasks/Steps

Thinking Tasks/Steps are the basic building blocks for productive thinking. Forty (40) such tasks have been identified including general mental operations like analysis, synthesis, description, review, decision, etc., that can be applied to essentially any kind of topic, object, event or situation. Since each *thinking situation* requires the right *thinking strategy*, the right *thinking tasks* are similarly aligned into the number and sequence of *steps* needed to arrive at the best resolution for each *thinking situation* at hand and the *thinking strategy* to be followed.

#	<i>Thinking Tasks/Steps</i>	Description of Task/Step
1	Observe Situation	Write a short background description of the current situation. Determine if the situation is a problem, opportunity or issue.

6	Problem Statement	Validate the real problem and write a clear concise problem statement.
10	Goal	Write a goal statement that describes the desired outcome or what the problem will look like after it has been resolved.
16	Analyze Cause	Analyze potential causes that maybe contributing to the problem and find which one is the root cause.
23	Categorize & Synthesize	Narrow the choices by categorizing and synthesizing ideas into a smaller list of promising ideas.
30	Design Deliverables	Design the proposed solution deliverables and get client approval to reduce chances of rework.
37	Feedback	Develop feedback mechanisms to identify ways for continuous improvement or to prevent future problems.
40	Detach	Celebrate and reward the work efforts. Detach workers from the project, if necessary.

Thought Switches (Tools or “Thinklets”)

Thought Switches (Tools or “Thinklets”) are small bursts of mental stimuli that can be as simple as one question, a short template or a thinking technique. These *thought switches* are designed to help the thinker alter routine thinking patterns and activate different and unfamiliar patterns leading to new associations, relationships and ultimately new ways of thinking. *Facilitated Thinking Environments* use the following five types of *thought switches* as mental stimuli to break scripted and routine thinking patterns.

<i>Thought Switches</i> (Tools or “Thinklets”)	Purpose
Trigger Questions	Empowers thinking by <i>triggering</i> the <i>right questions</i> to ask, which gives the mind its best chance to find the right answer.
Thinking Techniques	Instead of looking inside your mind for pre-existing thoughts, various <i>thinking techniques</i> activate fresh thinking patterns that spur the mind to make new connections that yield better ideas and new solutions.
Templates	<i>Templates</i> are simply forms, worksheets, or models. They are designed to filter and quickly arrive at relevant information. This enables you to look at the same information that others may see in different ways and patterns, resulting in enhanced understanding.
Tutors	<i>Tutors</i> enhance clarity in thinking by providing better meanings, definitions and understandings that are central to effective thinking and properly executed actions.
Cases	<i>Cases</i> are examples of how something has been done in the past. They are a mechanism that utilizes past experiences and results to stimulate new thinking on how to resolve similar or current occurrences.

6. Integrated Input Systems that Enhance the Performance of FTEs.

Facilitated Thinking Environments can be enhanced by integrating the following systems.

Knowledge Management

There is a correlation between people who think better and develop more ideas, with people that have a wide range of available and relevant background knowledge. Effective thinking can only occur if a person/team acquires the right “critical masses” of data and information to think upon.

Good *knowledge management* systems focus on the issues relative to creating, disseminating and utilizing data, information and knowledge (see *Thinking, Learning & Software Model*, page 3). Such systems get the right knowledge, to the right persons, at the right time, which is essential for improved thinking productivity, wisdom and insight.

eLearning

More and more workers do not have the time to leave their jobs to participate in structured training courses. In addition, while information and knowledge is available at Internet speeds, the ability to leverage such knowledge is sometimes too slow to produce a favorable outcome.

eLearning promotes on-demand learning, when the job requires it, by delivering learning objects or smaller bites of learning. The evolution of *Integrated eLearning Environments* (ILE) is a natural complement to *Facilitated Thinking Environments*.

Subject Experts

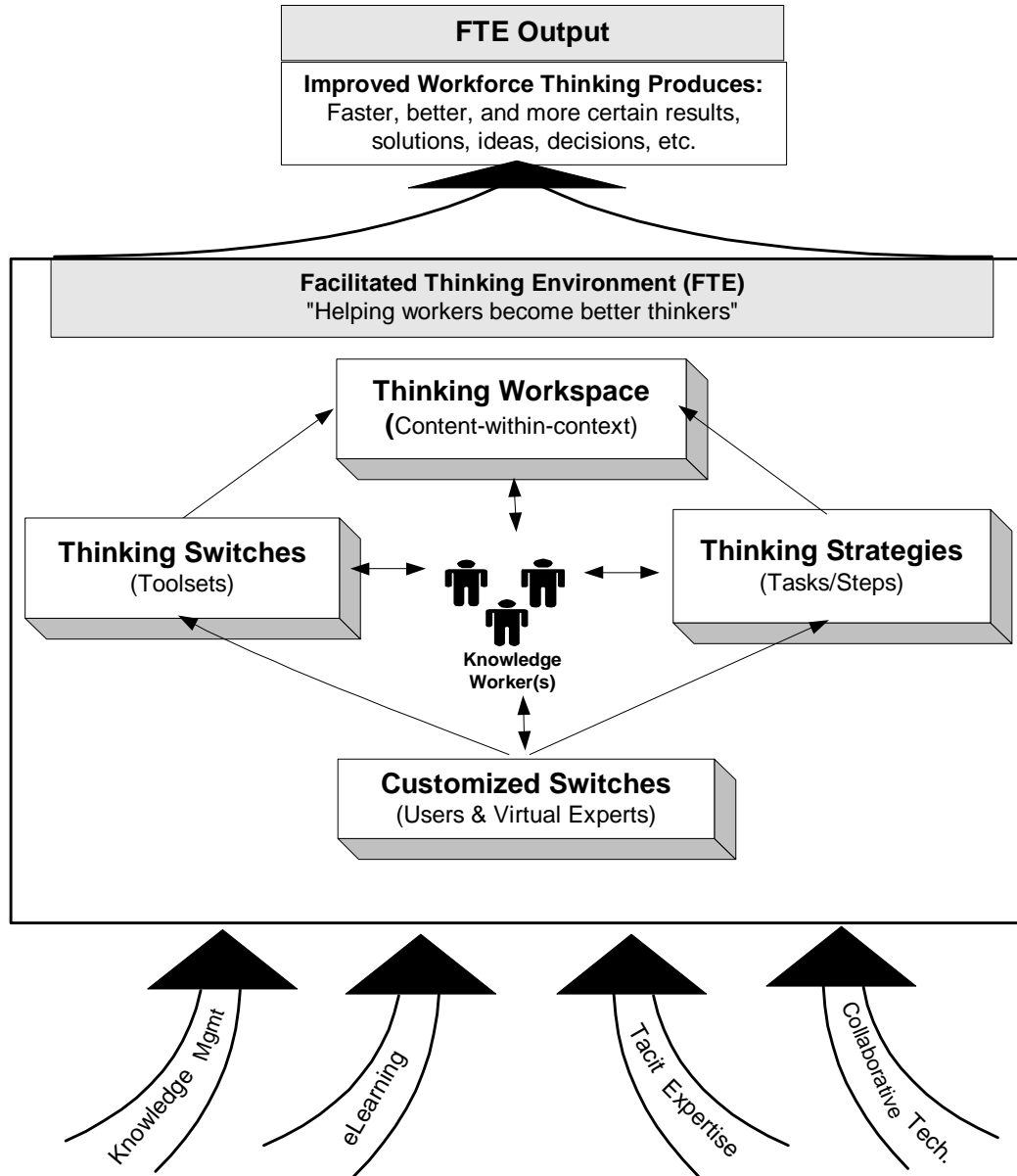
Perhaps as much as half of all knowledge is contained in the experience and tacit know-how of real universe experience, or real people. Tacit knowledge acquisition and transfer allows the inexperienced-person to gain years of knowledge from the experienced-person that has already been through the trial and error process. In other words, apprentice with the “old hands.”

A holistic *Facilitated Thinking Environment* goal should be that of linking “users” to each other so that tacit knowledge can be shared. In a truly collaborative manner, this will make available to “users” the *best thinking practices* of people from around the team/company/industry/world.

Collaborative Technology

Working collaboratively brings forth a synergy that raises each person’s level of thinking. Collaboration helps to create a shared understanding that no one person previously possessed, and fosters the co-creation of new ideas that no one person could develop alone.

The integration of collaborative technologies into a *Facilitated Thinking Environment* could be a very powerful combination.



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7. Outputs and Value Propositions from FTEs.

- Promotes innovation and a continuously creative culture for competitive advantage.
- Higher revenues from more innovative and higher quality products and services.
- Better quality products and services create higher customer satisfaction.
- More efficient work processes, shorter cycle times, less time wasted and fewer meetings.
- More empowered workers make for happier, productive, less-stressed people.
- Promotes a culture of life-long learning.

- Improves ability to ask the right questions.
- Strengthens whole-mind thinking abilities.
- Faster and better recognition of problems & opportunities.
- Manage and control change to your advantage.
- Fewer costly mistakes while attaining predictable successes.

8. Who Will Benefit from Facilitated Thinking Environments.

- **Business Analysts & Consultants:** Better determine data relevancy; systems think to understand the whole situation; analyze complex situations easier; better anticipate problems or opportunities; ensure the right problem is solved and that solutions don't cause other problems
- **Project Managers:** Help new or inexperienced PMs; ready reference for experienced PMs; build high performance teams; shorten Project life cycle; keep people informed; focus team energies to achieve superior results; more effective implementation plans and attainment of goals.
- **Problem Solvers, Methods Staff and Troubleshooters:** Quickly identify obstacles/root causes of problems; resolve urgent problems in 90 minutes or less; better feedback mechanism to prevent problem recurrence.
- **Meeting Facilitators/Leaders:** Better prepare for meetings; hold fewer and shorter meetings; more focused meeting results; better meeting follow-up, and reduced travel costs.
- **Decision Makers:** Develop the right decision making criteria; find the right decision making tool; make better balanced "systems" decisions.
- **Planners:** Develop better strategic, action and contingency plans; align goals and priorities in a balanced scorecard; establish feedback mechanism to prevent future problems; better capture ideas across the enterprise.
- **Quality Control Managers:** Improve product quality; use simplified Six Sigma at a fraction of six sigma training costs.
- **Human Resources, Organizational Developers:** *Facilitated Thinking Environments* are like having a consultant on-call for all your workers. Unlike human facilitators, FTE allows people/teams to work through their challenges at their own pace – and at a much reduced cost.
- **Engineers & Designers:** Improve ongoing process efficiency and quality; more innovative ideas; better process redesign; quickly refine creative ideas into practical solutions.
- **Team Leaders, Administrators, Supervisors:** Enhance team effectiveness; more and better communication and collaboration; identify areas for personal and team improvement; dialog more fluently; interact more confidently.
- **Trainers & Educators:** Quickly develop just-in-time training courses; reduce learning time; develop distance learning training.
- **Everyone:** Spark creativity on-demand; ask better questions; see opportunities better; strengthen "whole mind" thinking abilities; better tap into subconscious thinking; use as a coach to overcome personal issues and problems.