TRIZ Forum: Conference Report (22-A)

Personal Report of The Fifth TRIZ Symposium in Japan, 2009

Held by the Japan TRIZ Society, NPO, on Sept. 10-12, 2009, at National Women's Eduction Center (NWEC), Saitama, Japan

Part A. Keynote Lectures

Reviewed by Toru Nakagawa (Osaka Gakuin Univ., Japan), Nov. 22, 2009

[Posted on Nov. 23 , 2009; Updated: Dec. 6, 2009]

TRIZ Home Page in Japan

For going to Japanese pages, press   buttons. Japanese translation of this page is not scheduled.

Editor's Note (Toru Nakagawa, Nov. 22, 2009)

This page is Part A of my Personal Report of Japan TRIZ Symposium 2009. Please see the Parent page for the overall description of the Symposium and the general introduction of the Personal Report. I am thankful to the Authors for their permitting me to cite their slides here for introduction.

Editor's Note (Toru Nakagawa, Dec. 6, 2009)

The presentation slides of the two Keynote Lectures have been publicly posted in the Official Web site of Japan TRIZ Society on Dec. 1, 2009. You may access the PDF files directly: Boris Zlotin's lecture ; Darrell Mann's lecture .

Note: (TN, Mar. 11, 2010) Click here for the PDF file of this page of Personal Report.

A1 Keynote.	**Boris Zlotin**, Alla Zusman	(Ideation International, USA)	Use of TRIZ for Prediction of the Future of Technological Systems	
A2 Keynote	**Darrell Mann**	(Systematic Innovation, UK)	TRIZ: Necessary But Not Sufficient: Customers And Theories Of Everything	
A3 Tutorial	**Yojiro Fukushima**	(Panasonic Corp.)	Using TRIZ in an Effective Way for Problem Recognition and Solving	

3. Keynote Lectures and Tutorial

In the Symposium, two Keynote Lectures were given: one by Boris Zlotin (USA) and the other by Darrell Mann (UK). They are introduced here closely. A Tutorial was given by Yojiro Fukushima (Panasonic), it is introduced just briefly.

Boris Zlotin, Alla Zusman (Ideation International Inc, USA) [EI01 K-1] gave the first Keynote Lecture on the first day afternoon with the title of "Use of TRIZ for Prediction of the Future of Technological Systems". The Keynote speaker, Mr. Boris Zlotin, is TRIZ Master and was a follower and coworker of Mr. Altshuller for many years. [The presentation slides have been posted publicly in the Official Site of Japan TRIZ Society. You may access the PDF file directly: [E PDF] , and its Japanese translation by Shinsuke Kurosawa [J PDF] (Dec. 6, 2009, TN) New] Here I will quote his Abstract first:

The first successful attempts to apply TRIZ for forecasting of technology were made by TRIZ originator Genrich Altshuller in the end of 1960s. Since 1975 when Altshuller introduced the first system of patterns of technological evolution, Boris Zlotin has been involved in TRIZ forecasting, including development and further improvement of methods for TRIZ forecasting and managing evolution. For over last three decades, TRIZ forecasting projects for various systems from the majority of the areas of human activities have been conducted. This work has resulted in development of Directed Evolution methodology for the purpose of studying the given system evolution, predicting possible positive and negative events and solving inventive problems ensuring realization of preferable outcome.

Directed Evolution methodology includes analytical (DE questionnaires, algorithms for cause-effect analysis and failure prediction, etc.) and knowledge base (over 600 patterns and lines of evolution, Bank of Prognostic Scenarios, Operators for solving inventive problems, etc.) instruments that could be applied manually for relatively simple systems or educational purposes. For full scale projects, Directed Evolution software is recommended.

The presentation will also include the brief history of TRIZ forecasting, several examples of completed projects in various areas and selected utilized instruments.

The two slides (shown below) state the position and purpose of the Directed Evolution and its history.

The slogan of 'Control the Evolution' sounds very strong. The reasoning that this is possible is shown in the following slide (below-left). While a (technical) system is evolving (or growing) along a certain direction, it is easy to predict the near future directions and thus difficult to influence (or change) on its evolving direction. But when the system reaches at a crisis point due to its maturity or its heading at a serious contradiction,

there can be several alternative possible ways (i.e. branched ways) of evolution. At such a crisis point, it is usually difficult to predict which branch or direction the system evolves on, but at the same time it is easy to influence on the choice of the alternatives. Thus the Authors advocate to consider beforehand the possible alternative directions of the system at such a critical point and to evaluate the merits/demerits and the relative possibilities of alternative directions; thus to predict the most possible directions and to try to ride on the most possible or most preferable (for you) way of evolution. The next slide (below-right) explains about this situation for the case of predicting the system's evolution over one or multiple crisis points.
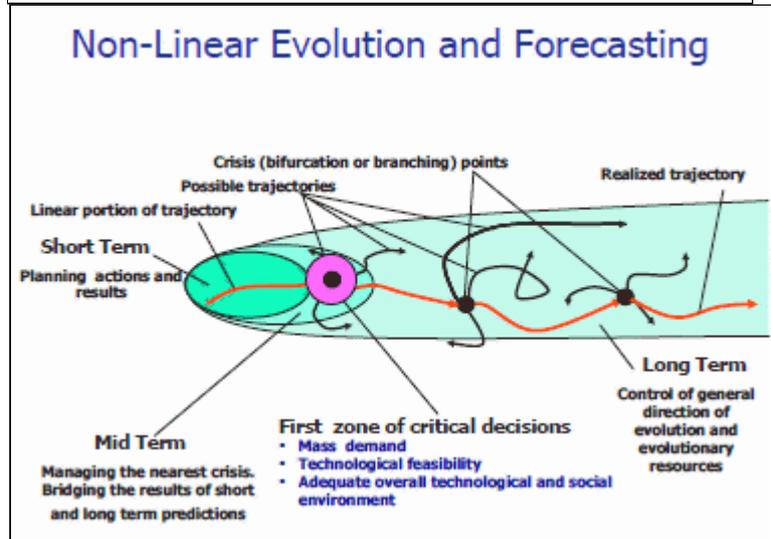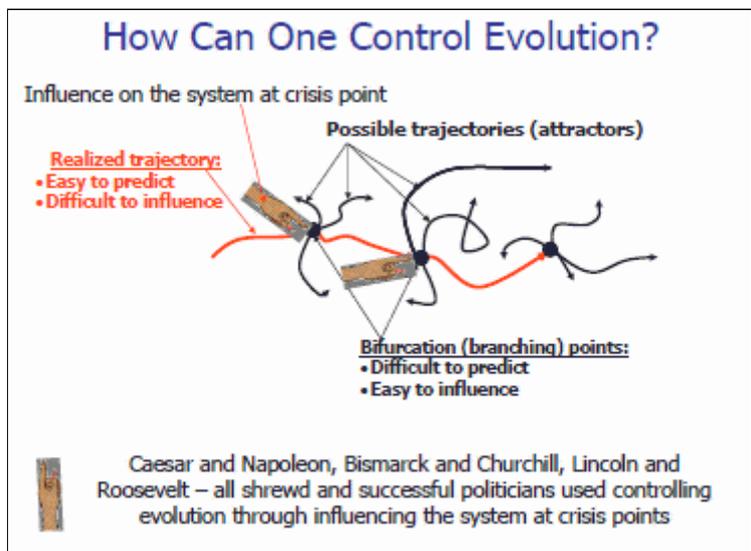

The slide (below-left) shows an example of figuring out different possible alternatives for the future of an existing product, i.e. a Foot Spa, in this case. Generating such ideas of possible alternatives in DE will enhance the decision making ability, as is explained in the slide (below-right).
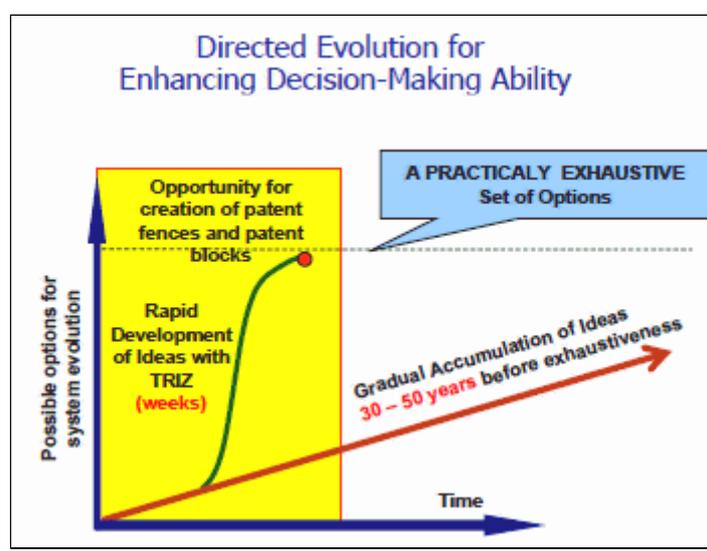
The actual process to be taken in DE is illustrated in the slide (below). The steps (1) through (5) are taken by using the methods schematically shown with diagrams and tables. These steps can be done manually for simple cases, and can better be carried out with software provided by Ideation International for bigger/complicated cases.
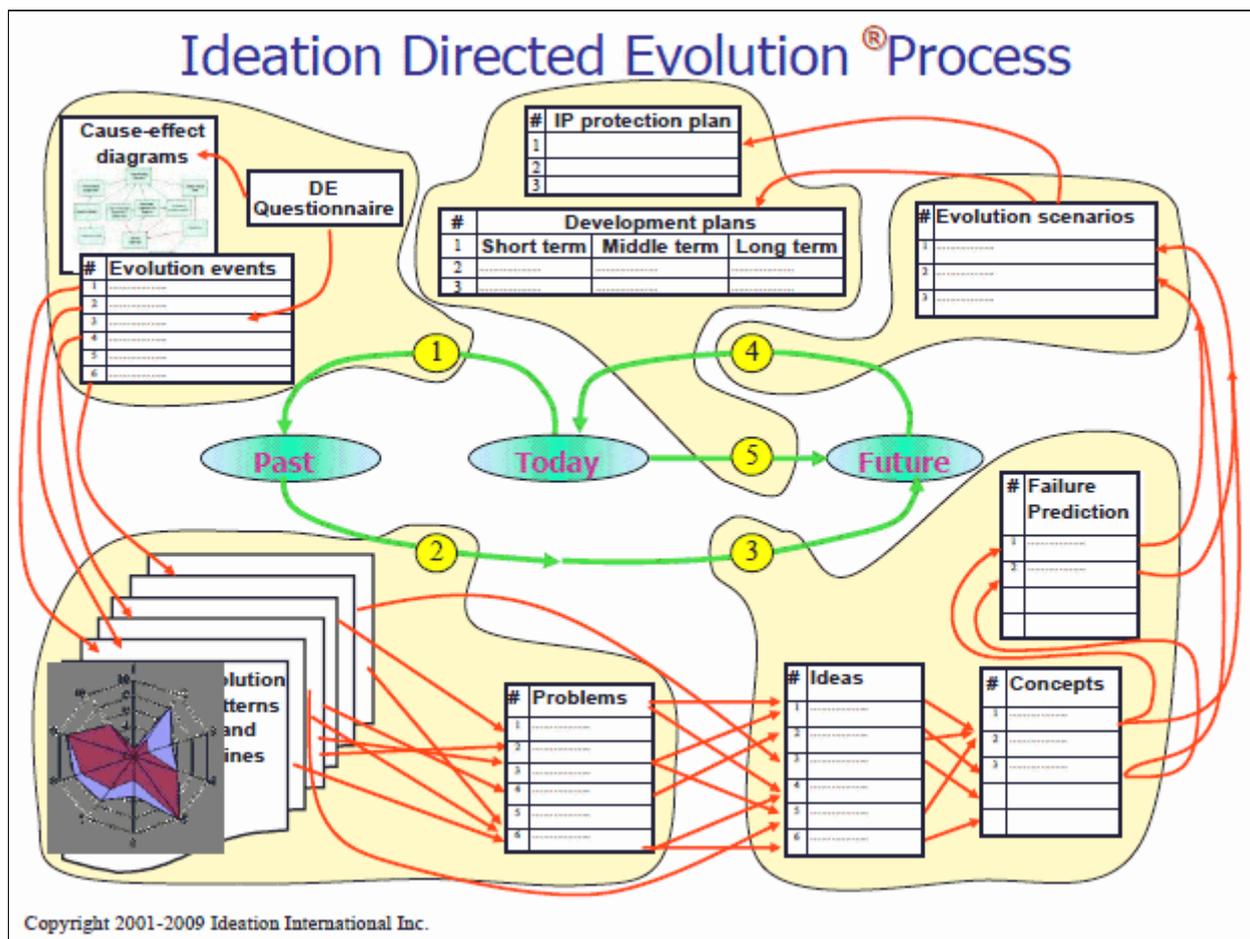
The DE method explained so far by the Authors (using 23 slides) has been established and published for these nearly 10 years (e.g. you may notice the copyright statement saying 2001-2009). In the Proceedings the Authors have additional 12 slides which show an interesting case of Directed Evolution Project "Vehicle of the Future". Unfortunately, in his lecture, Boris Zlotin spent nearly 70 minutes up to here and had only one minute left for this case study mentioning "A case study is shown. You can read it because it is obvious". --- *** I feel that almost all the audience would be much happier if the speaker explained the general part for 30 minutes and the case study for the latter 30 minutes. Anyway, I will quote 3 slides in his Case Study without explanation. They are really interesting information.

Energy Consumption and Waste per One Mile for Different Vehicles

Evolution of Hybrid Systems
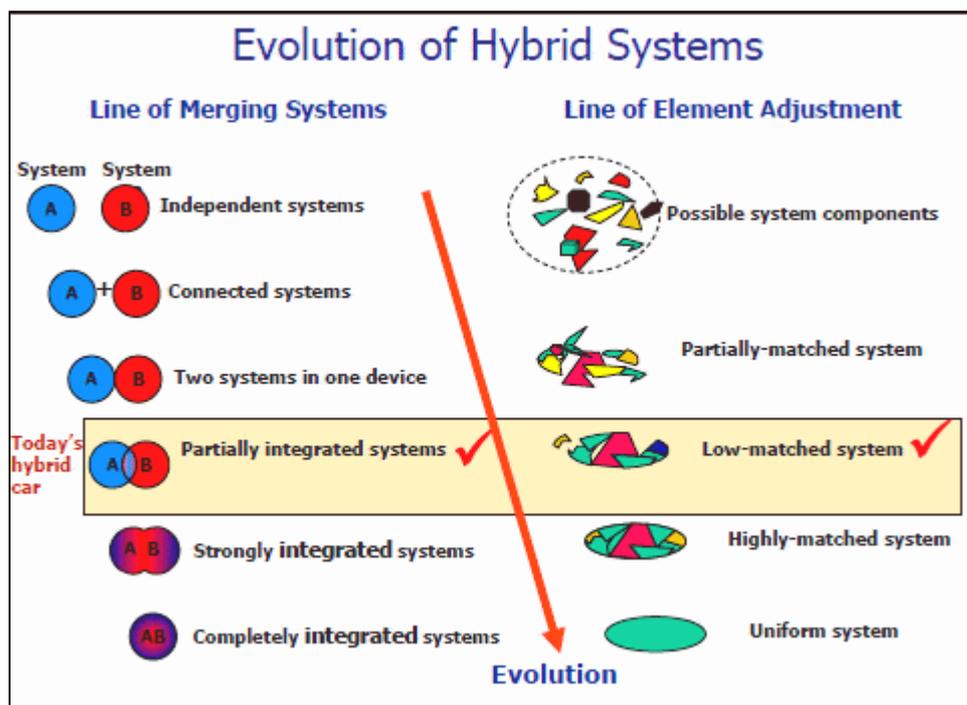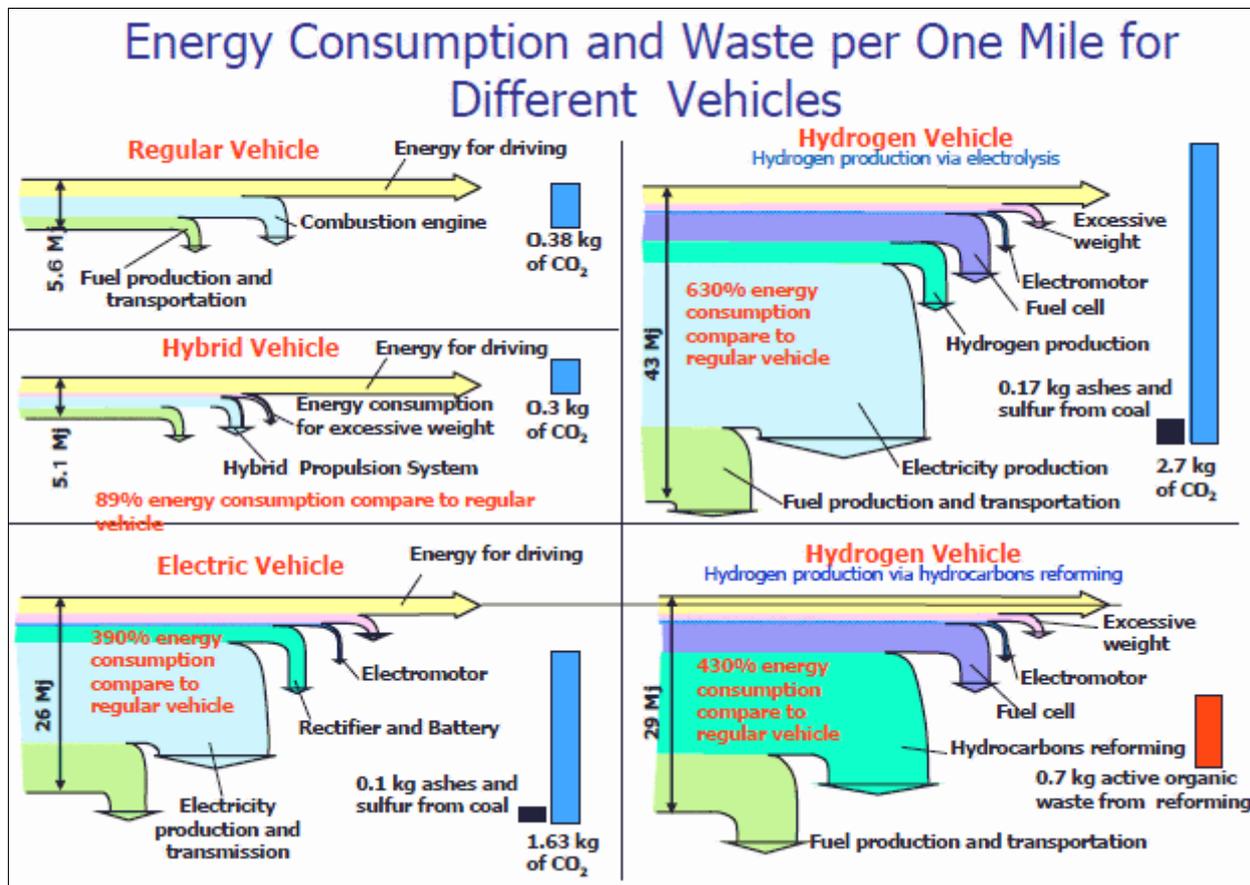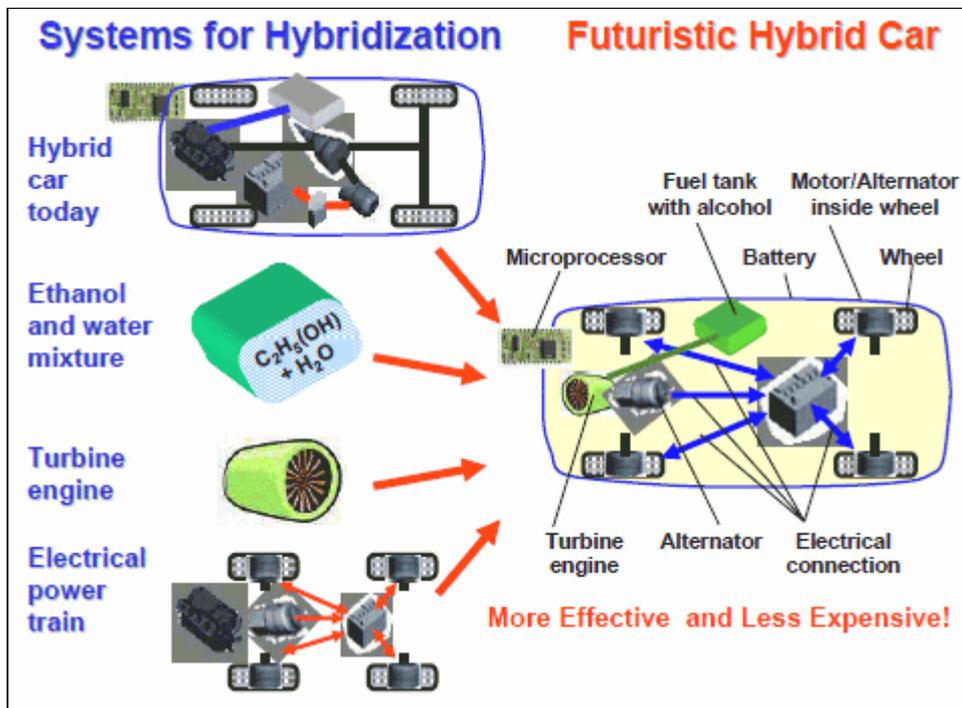
**Darrell Mann (Systematic Innovation Ltd., UK) [EI02 K-2]** gave the second Keynote Lecture on the third day morning with the title of **"TRIZ: Necessary But Not Sufficient: Customers And Theories Of Everything".** This is an amazingly big title. We, the Symposium organizers, invited Darrell Mann knowing his very wide range of work and activities, and asked him to talk about his big vision or big-scope of thinking on Systematic Innovation, rather than specific topics such as TRIZ (or systematic innovation) in IT/Software. Even though not an easy task, I would like to introduce you the main contents of his lecture here using about 20 slides, because a full paper is not requested/prepared for this lecture. [The presentation slides have been posted publicly in the Official Site of Japan TRIZ Society. You may access the PDF file directly: ⬛, and its Japanese translation by Yoshihisa Konishi ⬛ (Dec. 6, 2009, TN) ⬛]

The main motive of this lecture is to clarify why more than 90 % of projects fail to deliver their products to the market and why more than 90 % of such products fail to succeed in the market, or fail to innovate. The Author notices there are so many tools which should support innovations (see the slide below-left) and even more publications of business books (see the slide below-right). For clarifying these problems and establishing some effective methodology, the Author has been conducting an extensive and yet intensive research for these 8 years with a team of researchers, he says.
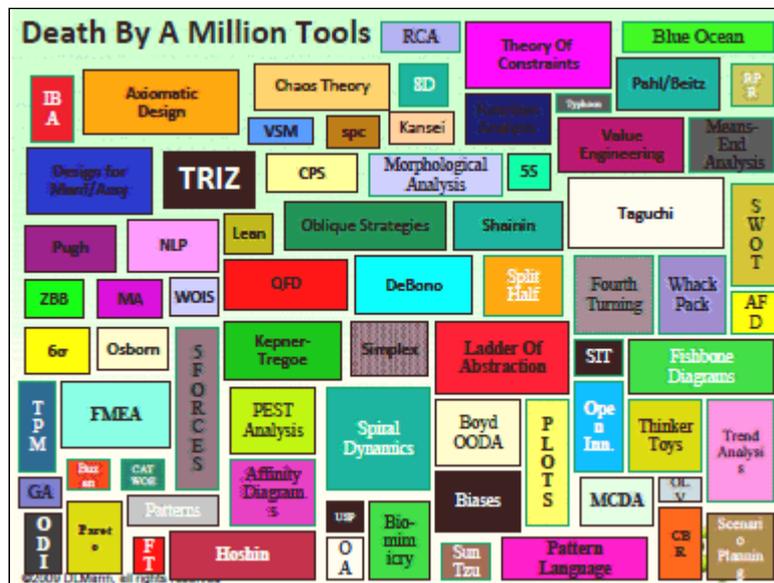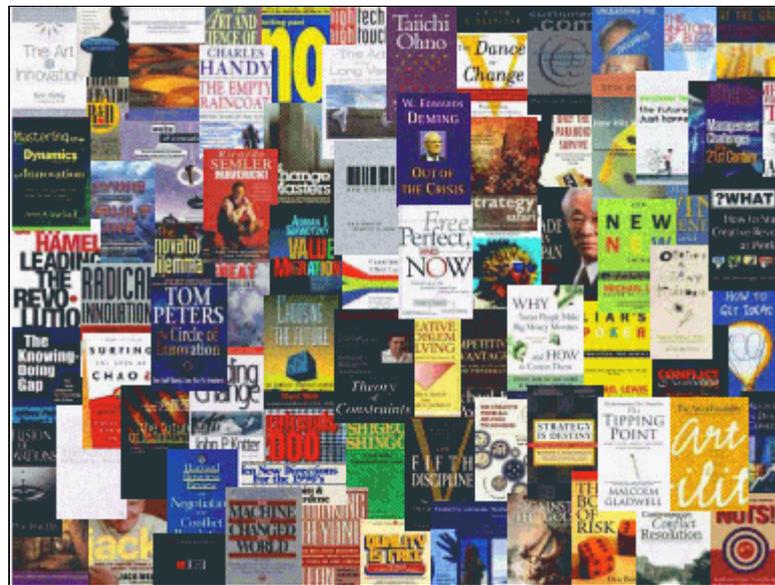
For clarifying the situations, the Author believes the necessity of having suitable 'Maps of the World', or 'Maps of Everything'. One of such Maps is shown below. The slide (upper-left) is the basic scheme having 4 boxes divided by the Internal/External worlds and by singular/plural persons. The Author interprets the four boxes as the basic functions of a business system and added the 'Control' function (for making the system 'Complete' in the sense of TRIZ); thus the boxes represent the tools and means of product development and market delivery (See the slide upper right). With this framework the Author has classified various tools and methods, as shown in the slide (bottom-left). Selecting the most useful tools in each box, the Author shows the 'Five Innovation DNA strands' (bottom-right). Here you see the picture of Mr. Altshuller in the upper-right box.
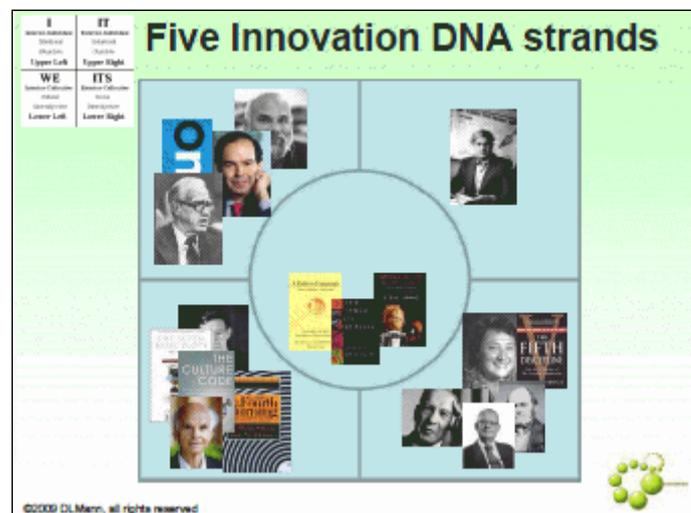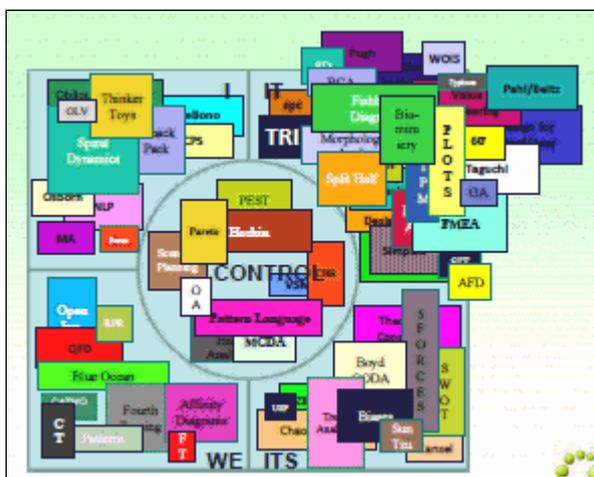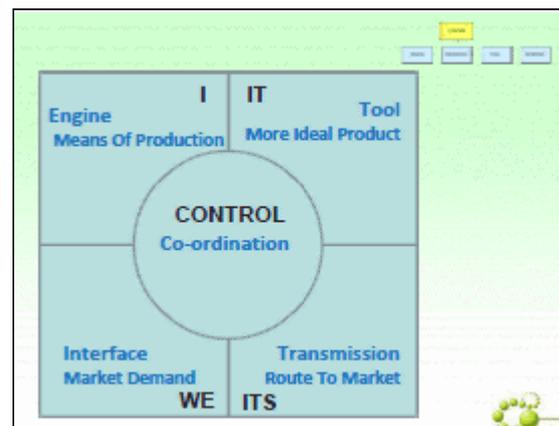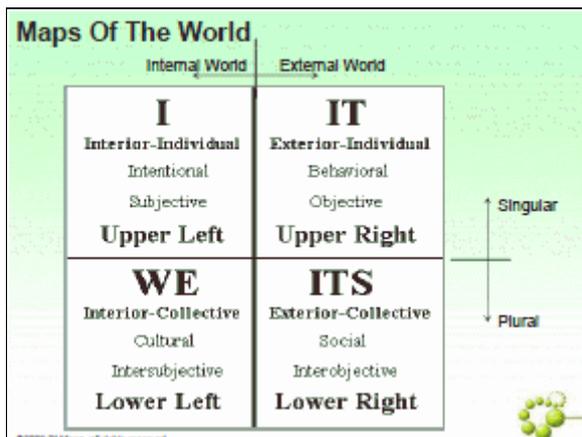
The Author's classification of numerous ideas in these methods and business books is amazing, as shown in the slide (below). As you see, the table here intends to be 'All the insights in one place' and its format is adopted from the Periodic Table of Atoms in chemistry. The first insight (i.e. in the Hydrogen position) is Tr (Trends), and the second (in the Helium position) is Id (Ideality). The insights at the second row are Sd

(Spiral Dynamics), Fa (Function analysis), Nl (NLP), Ip (Inventive Principles), Fd (Function Database), Sf (Software Factories), Sl (SLP), and Fu (Functionality). The Author says this is a result of his research for these 8 years and still under the way.

All the insights in one place
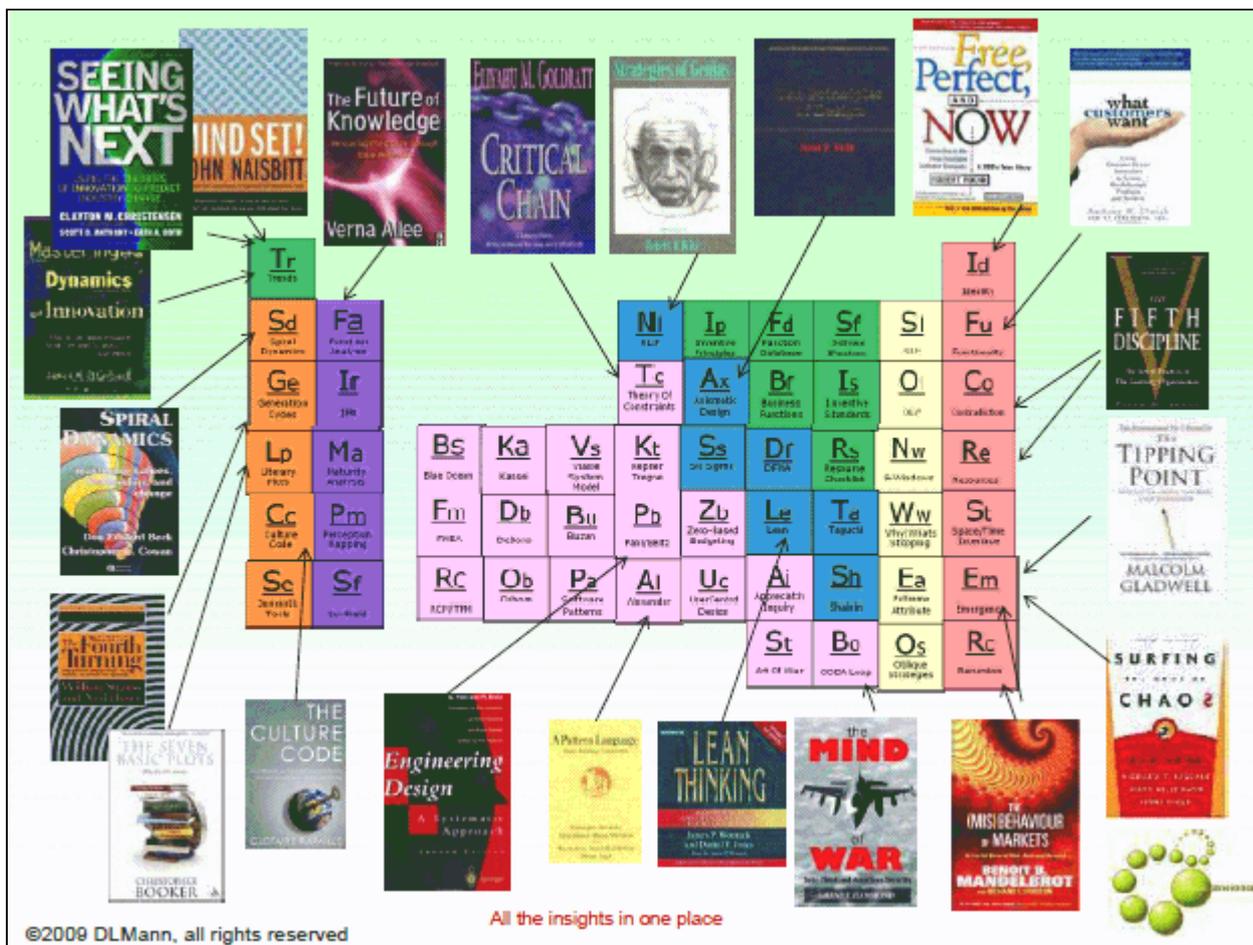
On these bases of thoughts, the Author now discusses the requirement for successful innovations. His main statement is shown in the following slide. "Innovation happens when the Voice of the customer matches with the Voice of the system." And he believes the main task for us to make an innovation is to find the real Voice of the customer, and hence the main research task for us is to establish effective ways for finding the real Voice of the customer.
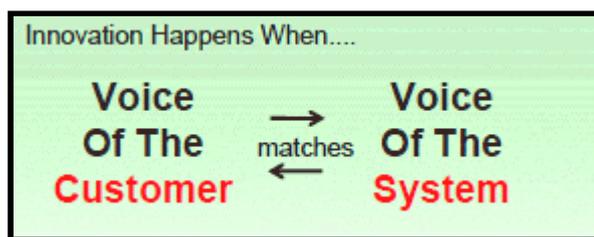
The Approach proposed here by the Author is schematically summarized in the following slide (below). [This slide is also named as 'Maps of the World' because the Author wants to map all the ideas (or insights) shown in the previous slides in this framework, I suppose.] In this approach, we should first follow the steps shown in the downward triangle for clarifying the Voice of the customer and for identifying contradictions where various trends may have to face with in the near future. Then we should try to solve such contradictions and to realize new products, by going up the steps (though not shown in any detail) in the upward triangle for achieving the Voice of the system.
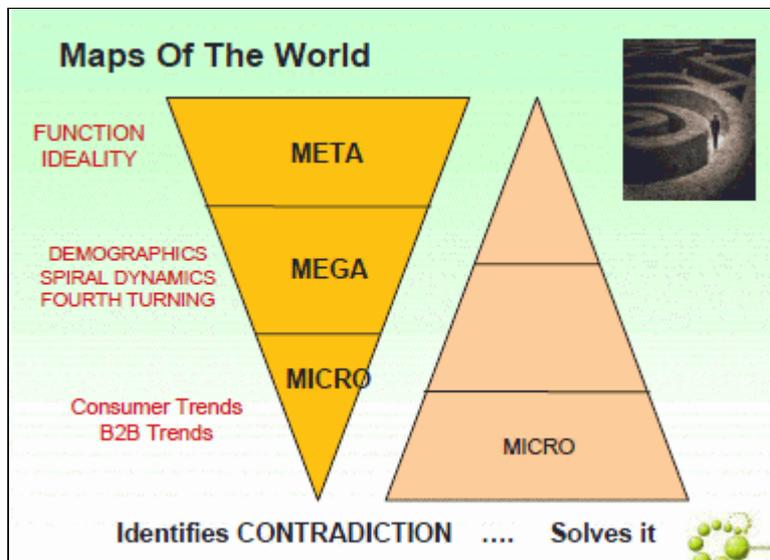
The first step, i.e. the META level of clarifying the Voice of customer, is relatively clear (see the slide (right)). It is to clarify the Functionality which the customers want to perform in their jobs.

For the second (MEGA) step, the Author proposes to use a few methods together. (a) First method is to think of the customer's (or consumers') lifecycle and the population change in your country (or in the world of your interest).
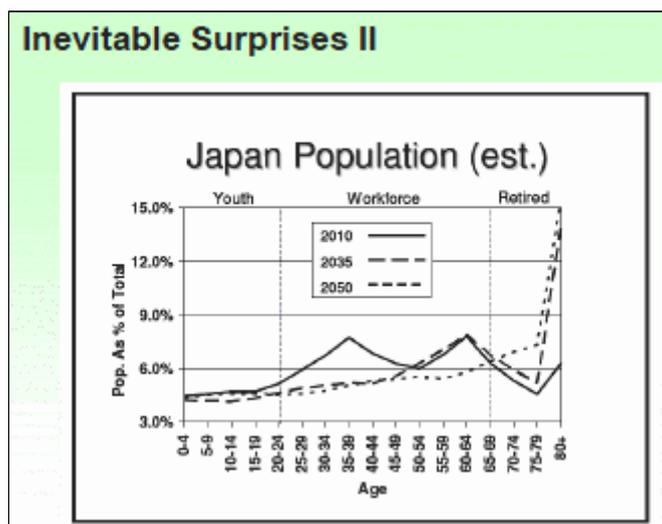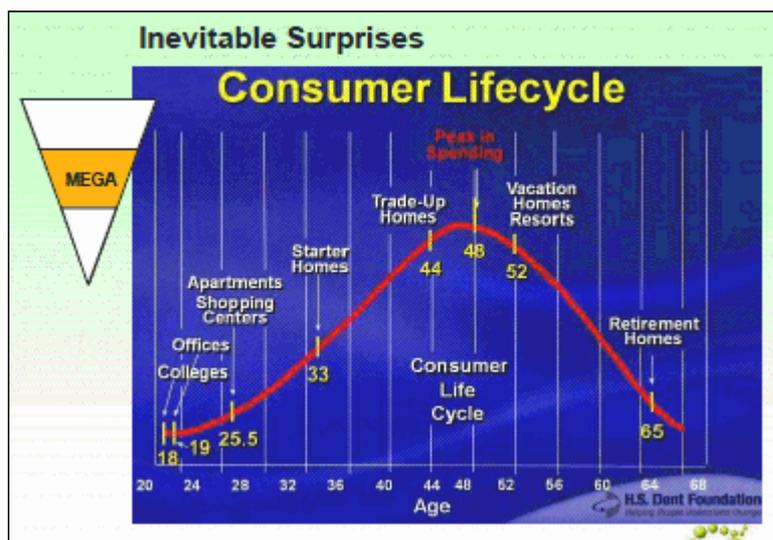
(b) The second method at this step is to think of the characteristics of generations of customers. The Author has adopted the idea of 'Generation Cycles' by W. Strauss and N. Howe (1997). The basic idea is that the manner in which you were raised by your parents in turn influences how you raise your children. For the case of US/UK after the World

War II, a model of four generation cycle was proposed (slide below-left). Assuming such characterization of generations of people and their behavior changes with their age, the characteristic cultural changes in people are schematically shown in relation to calendar year and age of people (slide below-right). This implies cultural shifts in young/adult people at the borders of the characterized generations. [The characterization of generations may differ, of course, depending on countries, but the ideas of generation cycle and generation shift may be applicable widely.]

Basic Idea – I – Complex Systems

The manner in which you were raised by your parents
In turn influences how you raise your children

US/UK Generational Cycles

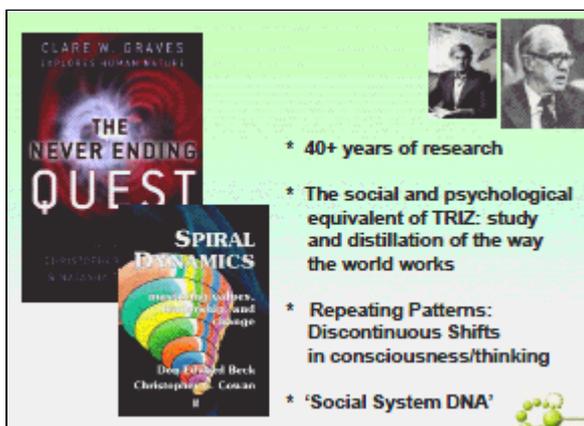|		0-20	21-41	42-62	63-83
(Generation Y)	HERO	protected	heroic	hubristic	powerful
(Silent)	ARTIST	suffocated	sensitive	indecisive	empathic
(Boomer)	PROPHET	indulged	narcissistic	moralistic	wise
(Generation X)	NOMAD	abandoned	alienated	pragmatic	tough

(2006 characteristics in red)

Strauss, W., Howe, N.,
'The Fourth Turning: An American Prophecy',
Broadway Books, New York, 1997.

The Impact Of Cultural Shifts On Timing

SILENT   BABY BOOMERS   GENERATION X   GENERATION Y 'MILLENIALS'   Not Yet Named

 (c) The third method is the consideration of people's characteristic behavior, on the basis of Spiral Dynamics (see below). The Author, Darrell Mann, evaluates the work by Clare Graves highly, saying about it "the social and psychological equivalent of TRIZ: study and distillation of the way the world works". Spiral Dynamics characterizes 8 levels of human thinking/behavior (given by the color codes) as shown in the slide (upper-right). Human behavior is typically motivated in two directions, i.e., pleasure seeking and pain avoiding (see the slide lower-left). Any person or human organization grows upward in a spiral manner following these levels and containing them as its inner layers. People at a certain level have their typical value thinking, thus they can be regarded as a group of customers. In the slide lower-right, people are categorized with the levels in Spiral Dynamics and the patterns in the Generation cycle. Several examples of people's behavior are shown in this framework; for example, 'Ms. Independent' is understood as females of NOMAD type at the 'scientific' level. This way of characterizing people is important and stable because it is based on the people's sense of values.

* 40+ years of research

* The social and psychological equivalent of TRIZ: study and distillation of the way the world works

* Repeating Patterns: Discontinuous Shifts in consciousness/thinking

* 'Social System DNA'

Beige	1. Survival	newborn infant, Alzheimer's victim, shell-shock
Purple	2. Tribal	gangs/tribal rituals/magic blood oath
Red	3. Feudal	power gods/ego, feudal rule, heroic, predatory, 'terrible two's'
Blue	4. Order	codes of conduct, hierarchy/order, 'moral majority', chivalry, puritan
Orange	5. Scientific	materialism, competitive, self-interest, 'nature tamed', 'management by objective
Green	6. Communitarian	'sensitive-self', deep ecology. 'politically correct' reconciliation/consensus/networking
Yellow	7. Holarchy	flexibility/adaptive, inter-dependence, co-opetition
Turquoise	8. Holistic	universal order, 'Theory of Everything' spiritual harmony

Then we now come to the third, MICRO step of revealing the Voice of customers. Here we want to capture various trends of customers, society, or markets. But once we found some logical trend relevant, the future deviates quickly, the Author writes (upper-left slide). As an example, the trend of 'I-want-It-Now/Life-on-the-Credit' is shown in the slide (upper-right), and the Author recognizes many trends enforcing it and also many others contradicting against it. The Author did a research first to list up about 1000 such trends, and to think of the enforcing and contradicting relationships among them. The slide (at the bottom-left) demonstrates (just a part of) the interrelationships among them, with the heading 'Everything is connected to Everything else'. The Author is suggesting that the contradictions among relevant trends takes us to the 'critical point' [just as discussed in Boris Zlotin's presentation] and needs to be solved for achieving an innovation. Darrell Mann's framework for finding/achieving the matching between the Voice of customers and the Voice of the system is shown again at the end (bottom-right).

Consumer Trends – What's Going On?

Every retailer spends time capturing and analysing consumer trend information. Almost invariably, once the information is captured, the future will very quickly deviate from what the trend predicts.
Even though, we can look at any individual trend and say to ourselves 'yes, I can see that this is a logical trend relevant to my operations' What is going on here?

MICRO

- ageing population
- longer life expectation (active for longer)
- greater determination to live life to the full
- sharp increase in single-occupancy homes/single parent families
- increasing importance of the extended family
- increasing property prices – children staying home longer
- increasingly sedentary lifestyle (compensated by guilt-trips to gym)
- increasing safety/health consciousness
- increasing religious/spiritual awareness
- 'chutneys' – hand-made goods
- authenticity
- increasing risk aversion
- ......

I-Want-It-Now/Life-On-Credit

The existence of easy credit means that many people have switched their spending philosophy from 'buy after I saved' to 'buy-now, pay-later'. The average personal credit card debt in many nations now exceeds 6 months of salary.
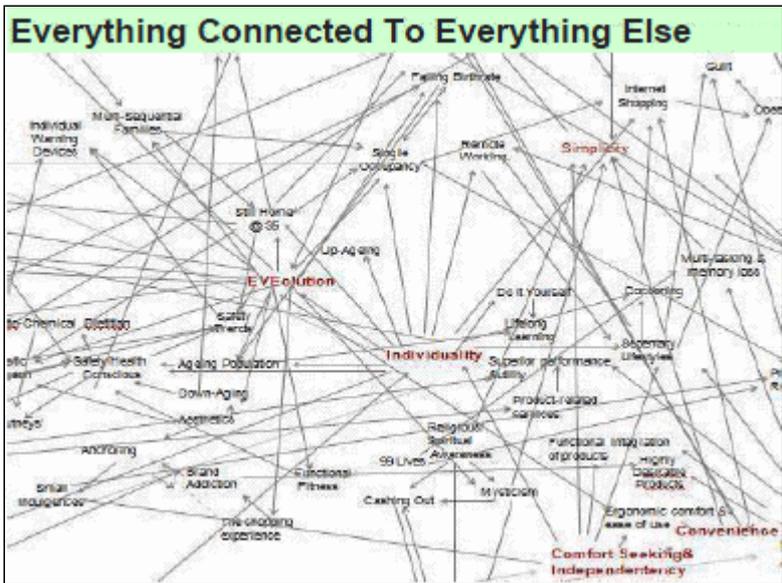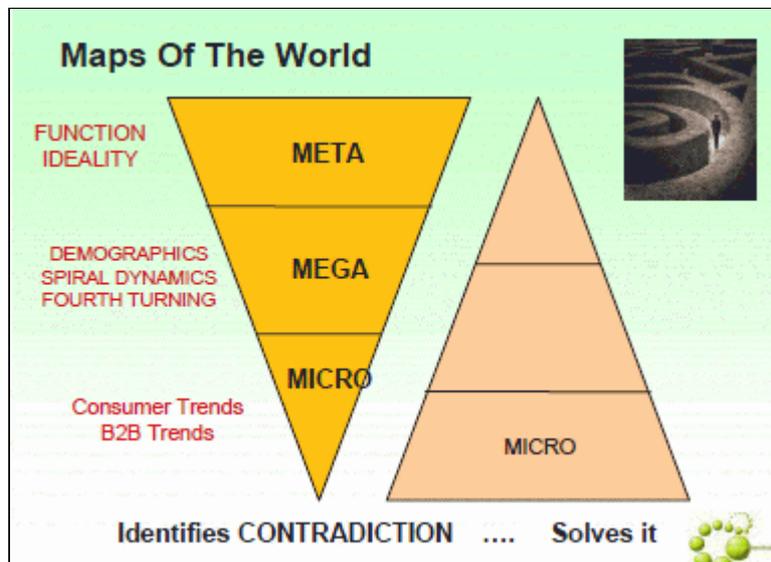
Re-enforcing Trends

- Convenience
- Cocooning
- Individuality
- Brand Addiction
- Little Luxuries
- Internet Shopping
- Ms Independent

Contradicting Trends

- Guilt
- Spiritual Life
- Save Our Society
- TechnoFear
- Anti-sumers
- X-anonymous
- Opting Out
- Hyper-Local

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Everything Connected To Everything Else

*** This lecture is based on an very extensive and intensive research. We can learn a lot in this lecture and also from the Author's publications.
--- As is announced separately, the "TRIZ Home Page in Japan" Foundation has presented Mr. Darrell Mann an Award for his contributions and services over many years in the field of TRIZ and Systematic Innovation [Engl] [Jap.] .

Yojiro Fukushima (Panasonic Corp.) gave an Tutorial on the first-day morming with the title of '**Using TRIZ in an Effective Way for Problem Recognition and Solving'.** It is a kind of my rule that I will not disclose the contents of Tutorials in my Personal Report. Thus I will quote the introduction to the Tutorial from the Symposium announcement:

> Mr. Yojiro Fukushima has been promoting TRIZ for these 6 years at the SE Center to apply it to the real projects in the corporate R&D divion of Panasonic. Last year at our Fourth TRIZ Symposium, he gave an Invited talk on his way of TRIZ promotion and its results; it was amazing for many participants that TRIZ has been successfully applied to real jobs in the IT/software field where TRIZ is still new. This year, the Symposium has invited Mr. Fukushima to give 2 hour tutorial on his approaches and experiences to the people who are relatively new to TRIZ. He has the experiences of teaching TRIZ to over 1000 engineers and guiding over 150 real projects with TRIZ and relevant methods. This tutorial will be an unusual opportunities for listening on the Panasonic's way of promoting and applying TRIZ. This tutorial will be given in Japanese only (without English slides).

[Note that **Yojiro Fukushima** also contributed an Oral Presentation on their results of TRIZ promotion. See Part B of the Personal Report. [Engl]]

General index	New Information	Introduction to TRIZ	TRIZ References	TRIZ Links	TRIZ News & Activities	TRIZ Software Tools	TRIZ Papers and Tech Reports	TRIZ Lectures	TRIZ Forum	General index [Jap.]
Home Page	New Information	Introduction to TRIZ	TRIZ References	TRIZ Links	TRIZ News & Activities	TRIZ Software Tools	TRIZ Papers and Tech Reports	TRIZ Lectures	TRIZ Forum	Home Page [Jap.]

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