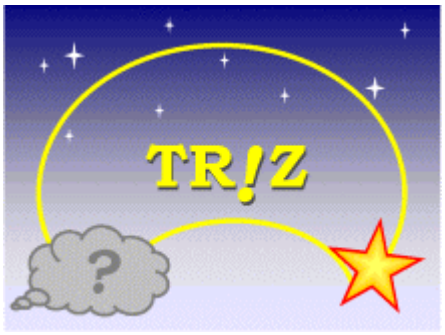
TRIZ Forum: Conference Report (23-E)

TRIZ シンポジウム 2010
The Sixth TRIZ Symposium in Japan



TRIZ Home Page in Japan Jap.

Personal Report of The Sixth TRIZ Symposium in Japan, 2010

Held by the Japan TRIZ Society, NPO,
on Sept. 9-11, 2010, at Kanagawa Institute of Technology , Atsugi, Kanagawa, Japan

Part E. Promotion of TRIZ in Industries

Toru Nakagawa (Osaka Gakuin Univ., Japan),
Dec. 14, 2010; Mar. 8, 2011

[Posted on Dec. 30, 2010; Mar. 21, 2011]

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

Editor's Note (Toru Nakagawa, Dec. 14, 2010)

This page is Part E of my Personal Report of Japan TRIZ Symposium 2010. Please see the Parent page Engl 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 quote their slides here for introduction. Click here for the PDF file of this page of Personal Report.

The following table shows the presentations to be included in this part. But currently only the top article is reviewed. (Since my reviewing work is much delayed, I have chosen to work on selected articles first independent of the topic categories. See the parent page.)

Editor's Note (Toru Nakagawa, Mar. 8, 2011)

I have added the reviews of 3 more presentations and finished writing this Part.

Code	Author(s)	Affiliation	Title of presentation	Agenda	Review	Posting of individual paper
JI05	**Kazuya Yamaguchi**	MOST, LLC	TRIZ for Managers -- Approach and Management Using Scientific Methods --	2nd day PM L-5 RA	(Dec. 30, 2010)	JTS Official site (Dec. 1, 2010); Engl Jap. (Dec. 30, 2010)
J12	**Hisataka Izawa**, Narumi Nagase, Shusei Kunitomo	Sony Corporation	Approach of Reverse TRIZ Using Industry System Newspaper Articles -- Concrete explanation of TRIZ for engineers in various technical fields in Research and Development --	2nd day PM O-15 RB	(Mar. 21, 2011)	JTS Official site (Dec. 1, 2010)
E01	**SeHo Cheong**, Len Kaplan, Valeriy Prushinskiy	Samsung Mobile Display, South Korea	TRIZ at SMD: Unique Situation, Unique Goals, Unique Approaches	2nd day PM O-13, RB	(Mar. 21, 2011)	
E02	**Tanasak Pheunghua**	The Inventor Development	Implementing TRIZ in Thailand	3rd day PM	(Mar.	

		Co., Ltd., Thailand		Poster-B4	21, 2011)	

[Note (Mar. 8, 2011): Presentation J02 by Takuo Maeda has been moved to Part H (Applications to Non-technical Areas).]

Personal Report (Top) Engl	Part A. Keynotes Engl	Part B. Methods in TRIZ Engl	Part C. Integration with other methods Engl	Part D. Case Studies Engl	Part E. Promotion Engl	Part F. Education and Academia Engl
Part G. Patent studies Engl	Part H. Non-technical Engl		TRIZ Symp. 2010 Official Page (Preparation) Engl	TRIZ Symp. 2010 Official Page (Results) Engl	Japan TRIZ Society Official Site Engl	Japanese page of Personal Report (Top) Jap.

Part E. Promotion of TRIZ in Industries

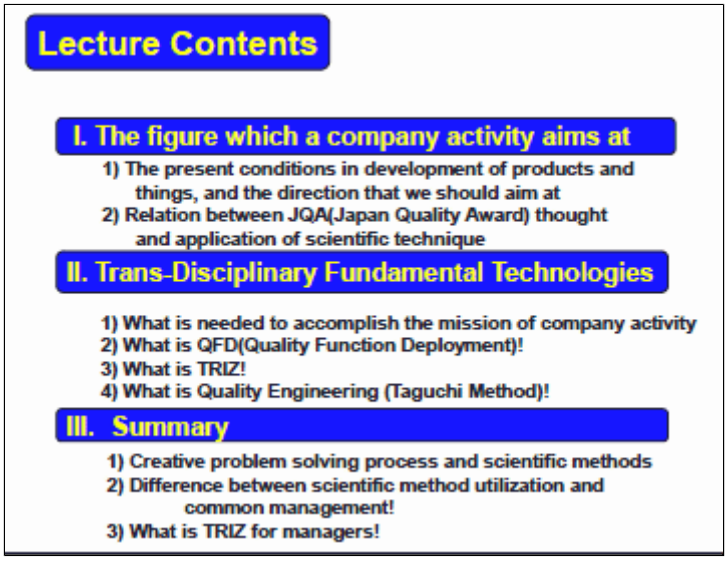
Kazuya Yamaguchi (MOST, LLC) [JI05, L-5] gave a Special Interest Lecture (i.e. an Invited Lecture) on the second day afternoon, with the title of **"TRIZ for Managers -- Approach and Management Using Scientific Methods --"**. He was Deputy General Manager of Development Process Management Department at Panasonic Communications Co. and led the company-wide movement of process/product innovation. He promoted the set of QFD-TRIZ-Taguchi-CAE methods, calling them "scientific methods" for QCD (Quality, Cost, and Delivery). He was an energetic manager who had actually mastered all these methods on the basis of his engineering background. After his retirement from PCC at an age-limit in 2007, he has been operating a consulting firm MOST. Now we should read his Abstract first:

> Since 2000, TRIZ activities have been expanding gradually, but the speed of expansion is slow. From the viewpoint that TRIZ is very effective, the gap between the above and how it should be seems to be tremendous. The main reason for this seems to be that TRIZ has been used just as a mere tool for “Inventive Problem Solving” by engineers, and people including managers up to the top executives of companies have failed to recognize it as an indispensable part for the company’s organized activities.
>
> And, taking the changing times into account, most of the top executives of companies usually braced themselves in a dashing manner and produced good results without finding a great tool like TRIZ. Consequently, they have no thought about TRIZ or things like that at management, and firmly believe that to brace oneself in a dashing manner is the fundamental for producing good results. Managers are required to learn the current status well, define their roles for themselves as managers in the companies, and take active procedures to break out of the status quo. And for that, it becomes important how to think about TRIZ as a manager, how to talk around the top executives and/or subordinates, and how to set the environment to utilize TRIZ. These points will be presented together with the combined application with QFD and quality engineering as “TRIZ for Managers” useful for management through the present writer’s experience.

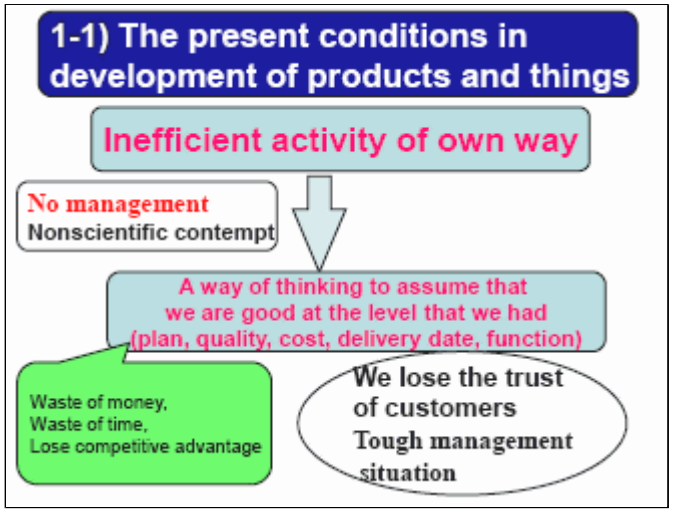
*** Listening to his presentation and reading his slides again for the present review work, I am much impressed with his messages. This lecture contains deep thoughts and powerful messages based on his experiences to managers in industries and to the people who want to learn and apply any of methodologies for improving QCD and for innovation. Since his slides are rich and well organized, I feel it rather difficult to reduce them in number. I am going to use 24 slides among the original 54 slides. See the original set in Japan TRIZ Society's Web site: E PDF J PDF.

The slide (right) shows the contents of the lecture. The most important point here is that TRIZ is promoted as one of the three principal methods in "Trans-disciplinary Fundamental Technologies". The Author puts much stress on the necessity that company activities should be addressed to meet the request of QCD (Quality, Cost, and Delivery), as stated in JQA (Japan Quality Award). And for this purpose, he promote the application of scientific

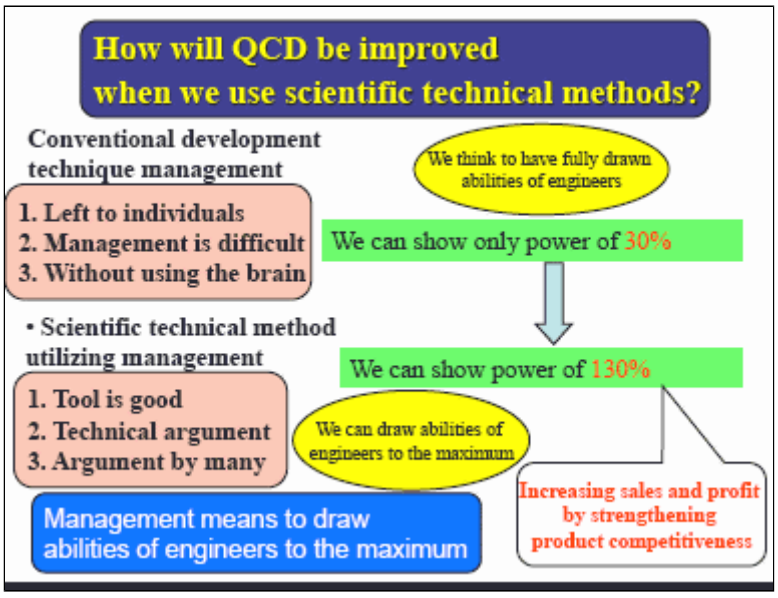
techniques, especially the trans-disciplinary, all-round, fundamental technologies. He recommend to use QFD, TRIZ, and Taguchi Method (or so-called Quality engineering, in Japan) together in a set, because their roles are complementary with each other. He explains the essence of these methods one by one in the main sections of this lecture, and summarizes their roles again in the concluding section.



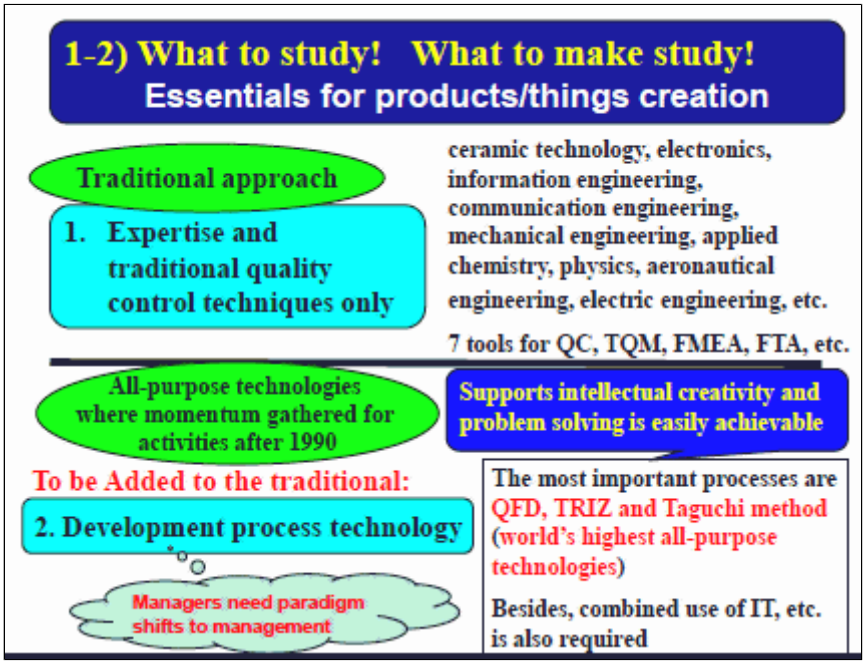
In the following slide (below-left) the Author criticizes the conventional ways of management of product development in industries. In the conventional management, inefficient activities of our own ways are prevailing without using scientific methods, and hence we waste money, waste time, and lose the trust of customers. Thus (in the slide (below-right)), we should aim at the direction of 'scientific management approach'. We have to realize the products 'Good, Early, and Cheaply', by using rational scientific technical method, the Author says.



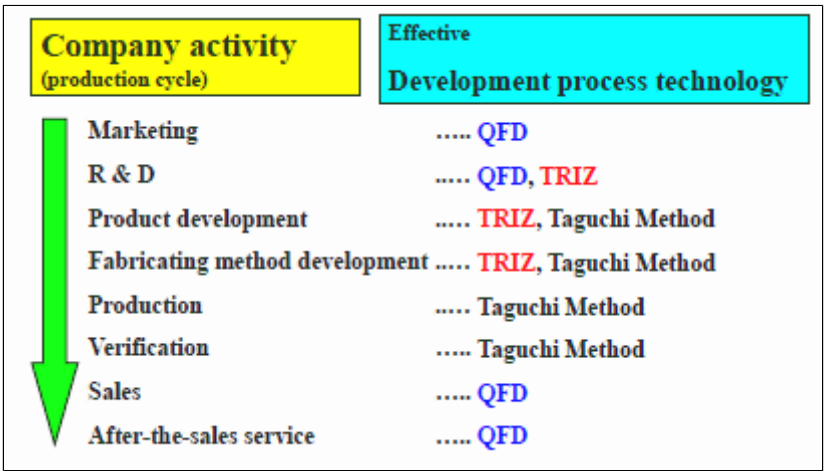
By the management using scientific technical methods, the people in the company will change in the manner as shown in the slide (right), the Author believes. Since tools/methods are good, there arise technical discussions involving many people and the abilities of engineers can be drawn to the maximum. The power of people will be shown at 130%, instead of 30% in the conventional management. This will improve QCD (Quality, Cost, and Delivery) of the products. And hence, it will strengthen the product competitiveness and increase sales and profit of the company.



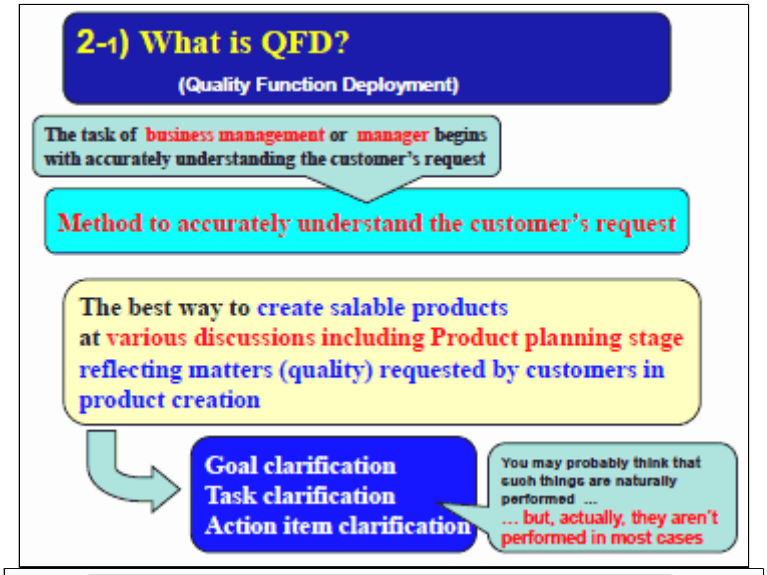
In the slide (right), the Author discusses what to study for products creation. In the traditional approach, (a) expertise in specific fields of science & technologies and (b) traditional QC techniques (e.g., 7 tools for QC, TQM, FMEA, FTA, etc.) are used. Since around 1990, all-purpose technologies for product development processes have been developed well. Hence, in addition to the traditional tools (a) and (b), we should use (c) Development Process Technology. The most important methods in (c) are QFD, TRIZ, and Taguchi Method. Usage of IT, e.g. CAE/CAD/CAM etc., is also required. These methods support intellectual creativity and assist problem solving. The emergence of (c), the Development Process Technology, urges managers to make a paradigm shift in the management in industries.

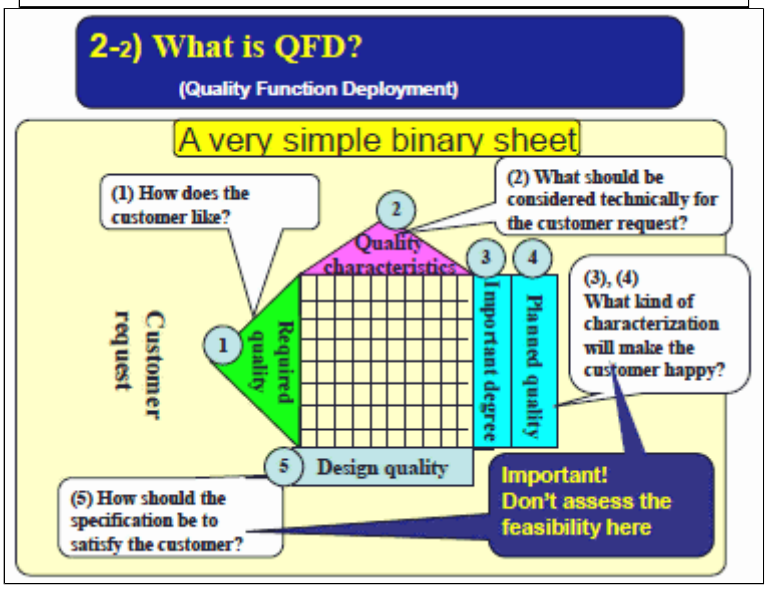


The slide (right) illustrates the company activities for product creation, in the form of production cycle. Corresponding to the activities in each stage, the Author shows relevant, effective method of Development Process Technology. QFD is effective in the stages of Marketing and R&D. TRIZ is effective in the stages of R&D, Product development, and Fabrication method development. Then Taguchi method is effective in the stages from Product development to Production and Verification. At the later stages of Sales and After-the-sales service, QFD is effective again. Overlapping of methods in a stage and covering multiple stages of a method come from the Author's experiences.

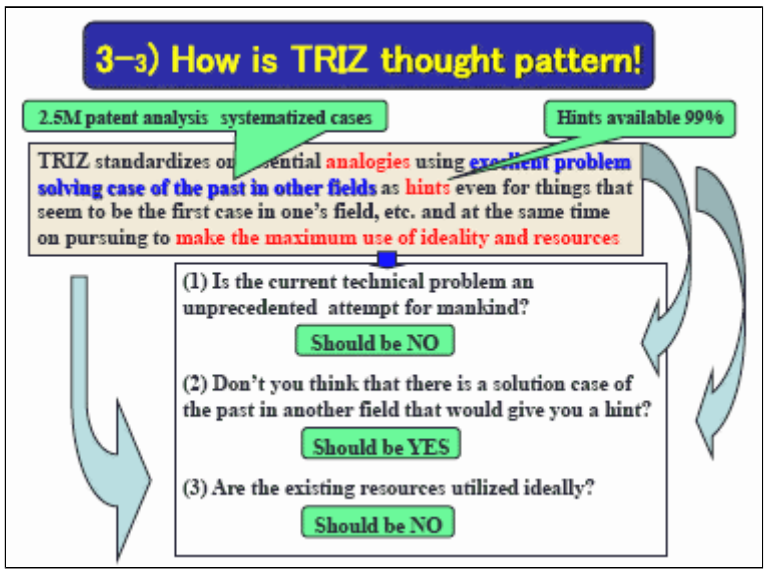


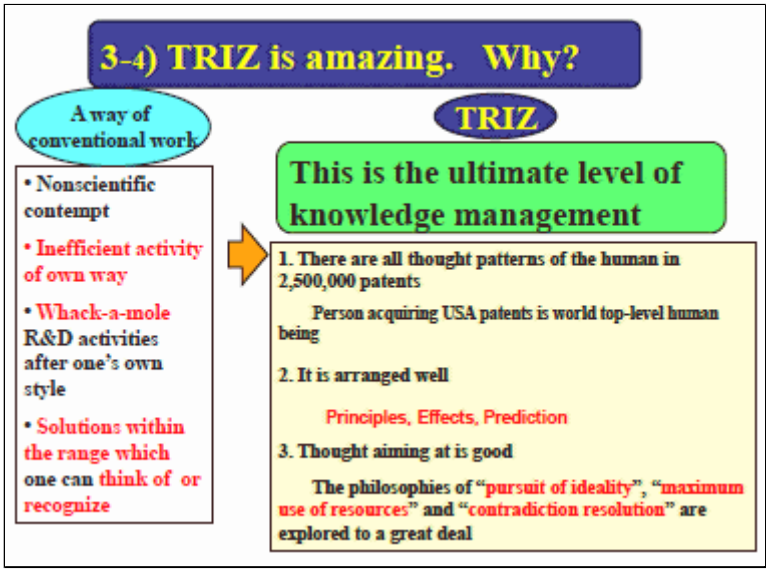
The Author now explains the 3 scientific methods by turn. QFD (Quality Function Deployment), first. The purpose of QFD is shown in the slide (below-left). It is for accurately understanding the customers' requests; clarifying the goal, the task, and the action items. The method is based on the matrix-type representation as shown in the slide (below-right). The process of using QFD is shown as the sequence in (1) to (5) in the slide: They are: (1) Customers' requests are broke down into the required quality; (2) For fulfilling the customer request what characteristics should be considered technically? and (2a) the relationships between (1) and (2) are to be marked in the matrix in the center of the sheet; (3) Importance of the requests are evaluated, and (4) the strategic plan should be decided for making the customers happy; and (5) the design quality is evaluated on the basis of the information in the matrix (2a) and their degree of importance (3)(4). The Author writes the secret of using QFD at the bottom-right corner of the slide: "Don't assess the feasibility in the evaluation of (4) planned quality and (5) design quality. Difficulties are to be solved in the next stage, where TRIZ is applied.



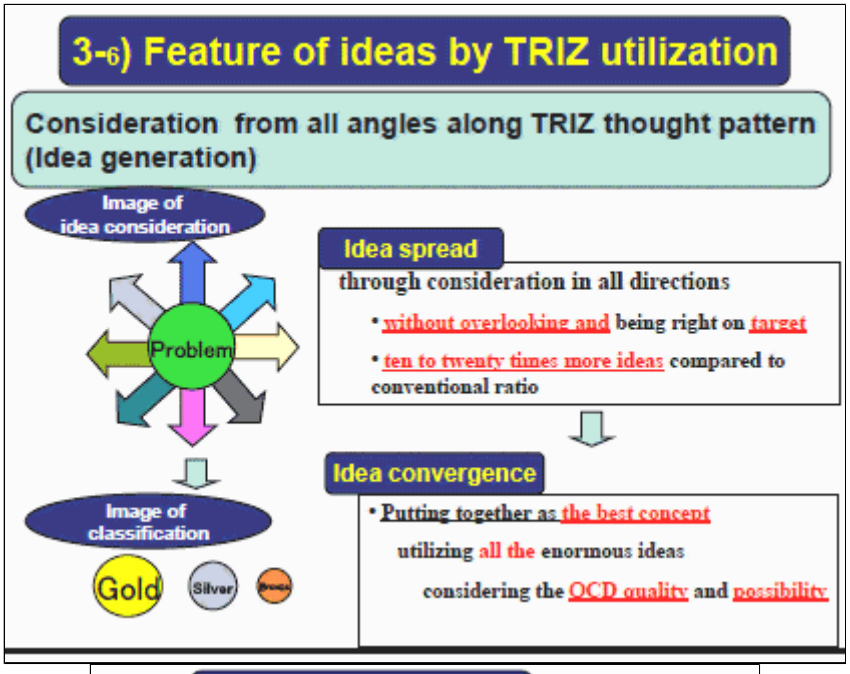


Then the Author illustrates the usage of TRIZ in the next stage. Even though the Author explains several Knowledge-based standard tools of TRIZ here for the managers novice in TRIZ, I will omit them and put more stress on the managemental/philosophical side of TRIZ. In the slide (below-left), the Author explain the thought pattern in TRIZ as "analogical thinking using excellent problem solving cases derived from the past in other fields/industries". Even though the present technical problem seems quite new for us, there should be some cases similar in its essential nature in other field. And at the same time we should pursue to make the maximum use of ideality and resources. The slide (below-right) places emphasis on the advantage of TRIZ as the ultimate method with 'Knowledge management', or well-accumulated and well-organized knowledge bases in science and technology.



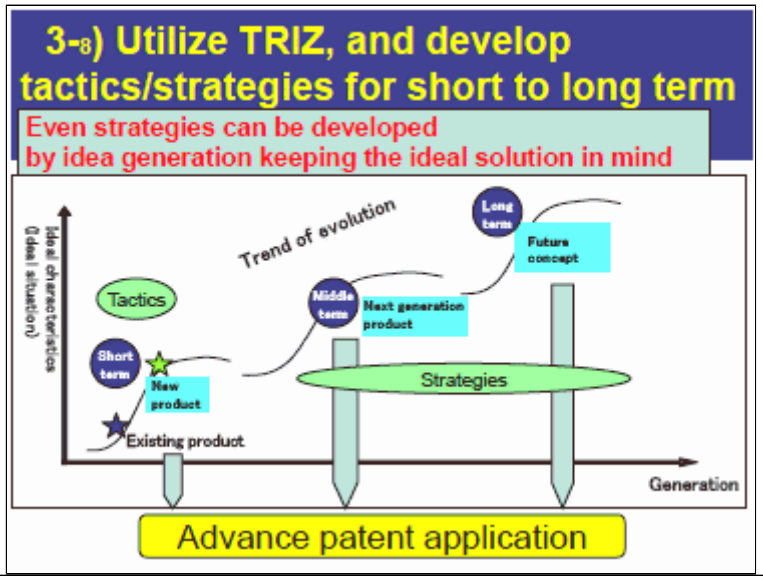


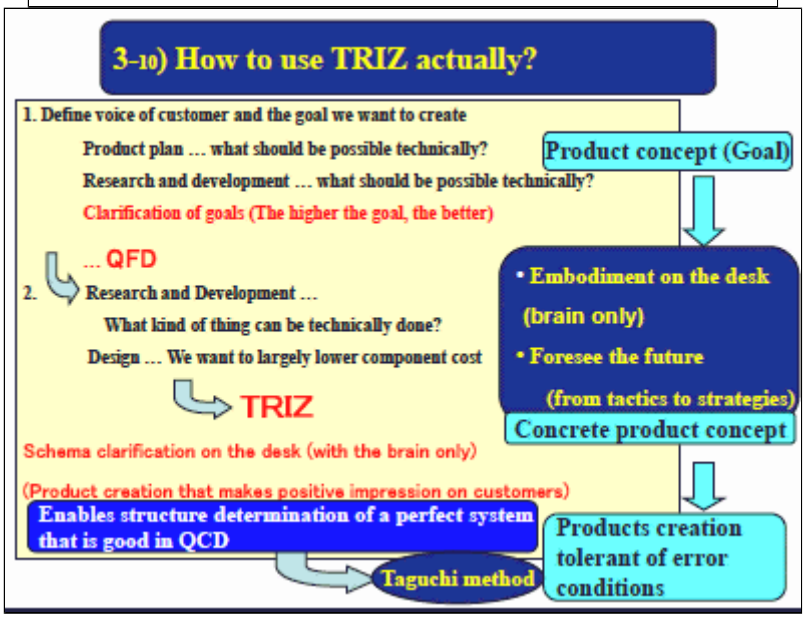
In the following two slides (below), the Author summarizes the features of ideas obtainable with TRIZ. Ideas can be generated in all the directions and they can be converged into the best concepts. The concepts of ideality, resources,



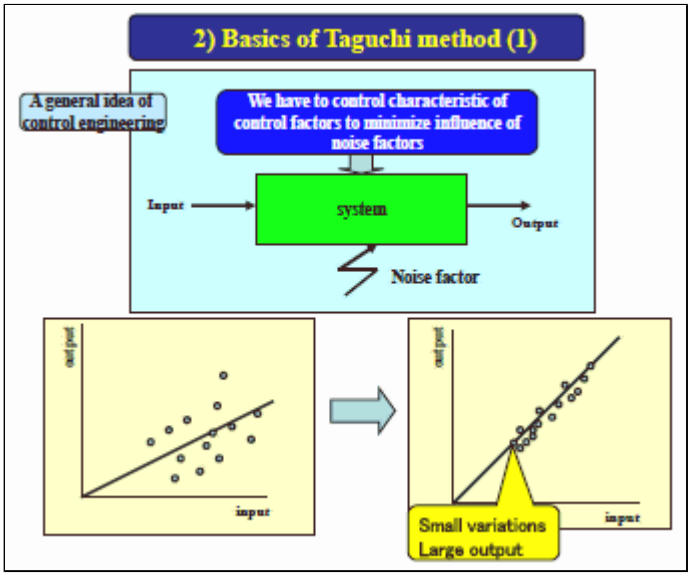
Using the generated ideas, the Author advises to develop multiple conceptual solutions, e.g. solutions for new products in a short term, conceptual solutions for next generation and future generation products, etc. (See slide (below-left).) It is the Author's recommendation to develop strategies for next and future generation products by keeping the ideal solution in mind. The slide (below-right) makes the position of TRIZ clear in the

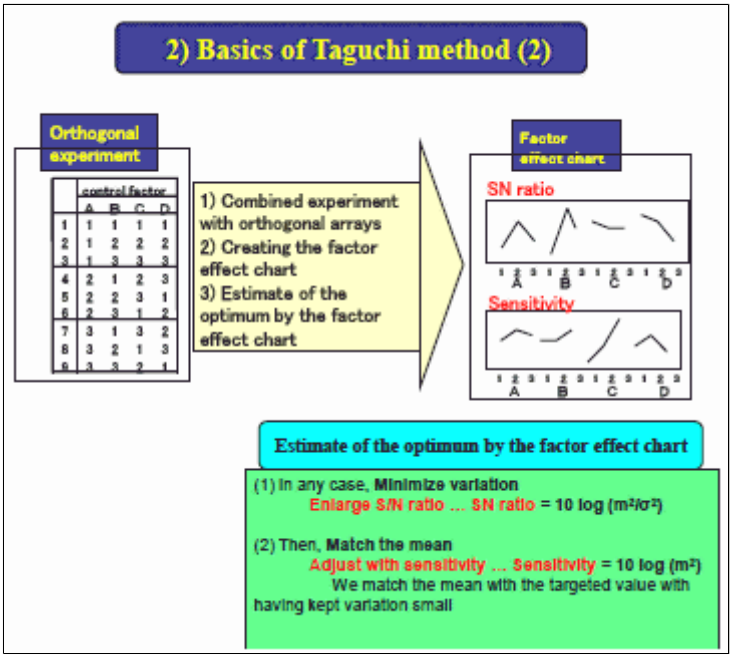
'scientific methods'. As is described above, the product goal has to be decided by using QFD. The higher the goal, the better, the Author says. Then in the R&D stage TRIZ is used to solve the technical problems for embodying the goal. Concrete conceptual solutions must be the results. We should foresee the future and decide not only tactics but also strategies. The TRIZ process can be done on the desk by using our brains. Then in the next step, by using Taguchi Method, structure of the products are to be determined so as to make the system tolerant to error conditions and perfect in the QCD requirements.



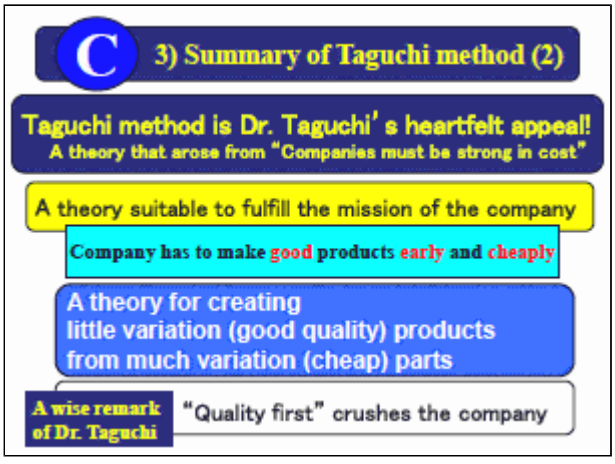


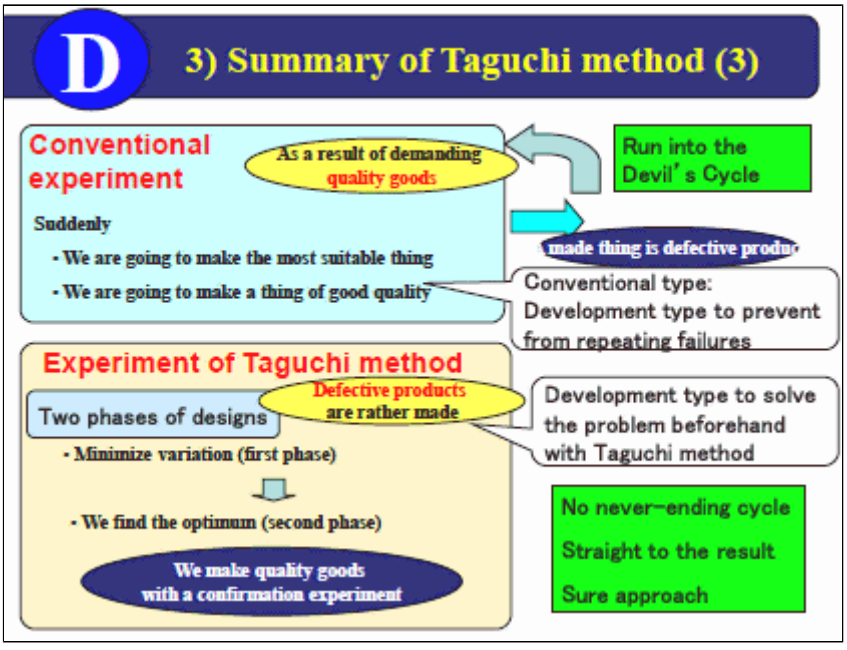
Now the Author starts the explanation of the third of the 'scientific methods', i.e., Taguchi Method (or Quality Engineering). The slide (below-left) states the general idea of TM as 'to control the characteristics of control factors to minimize the influence of noise factors'. The procedure of TM is illustrated in the slide (below-right). First, choosing the control factors and their values (of two to four levels), combined experiments are designed according to the orthogonal arrays. Then the results of the experiments are plotted in the factor-effort chart. And then the optimal control factors are estimated so as to minimize the variation (or larger S/N ratio) and to match the mean (or adjust with the sensitivity).





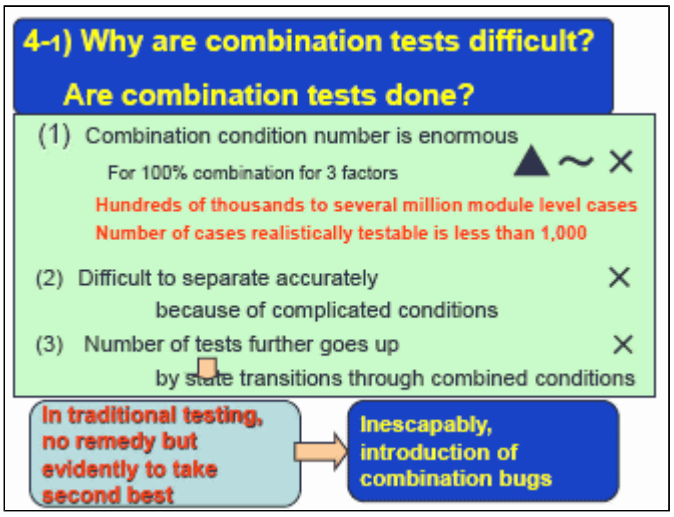
In the slides (below-left), the Author summarizes the advantages of using Taguchi Methods. 'Companies have to make good products early and cheaply. TM is a theory for creating little variation (good quality) products from much variation (cheap) parts. This makes the companies strong in cost. Dr. Taguchi's wise remark: "Quality first" crushes the company. [Because high quality products from high quality parts are expensive and cost burden.] In the slide (below-right), the Author compares the conventional experiments with the TM experiments. In the conventional experiments we try to make a thing most suitable and good quality (by choosing supposed-to-be-optimal parameters). However, the resultant thing is defective in some points, and we have to carry out experiments with some revised (but still trial-based) parameters. We often run into the devil's cycle. On the other hand, in the experiments in TM, the design is made in two phases. In the first phase, a wide range of control parameter values are tried without being afraid of making defective products; this first phase is to estimate the parameters of minimum variation and to learn the problems beforehand. In the second phase, optimum parameters are found. This does not run into a never-ending cycle, but goes straight to the result with much shorter time.

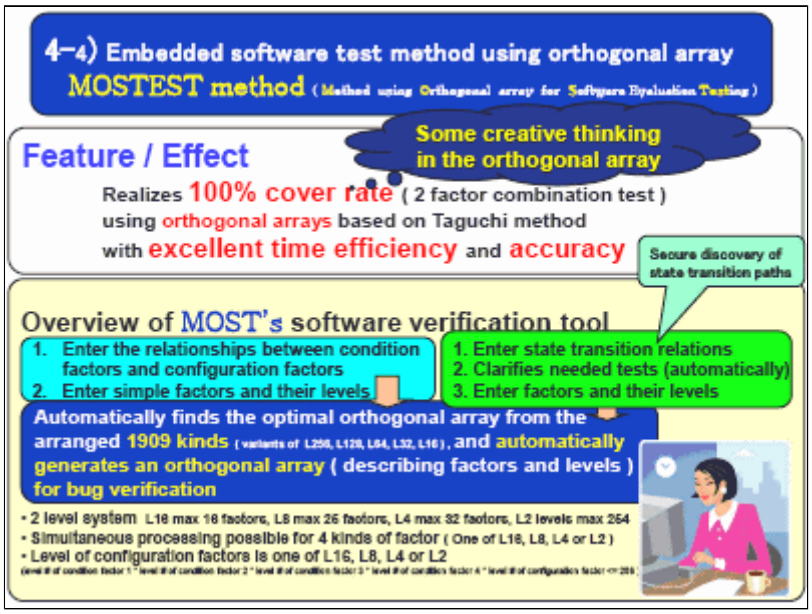




The Author, Kazuya Yamaguchi, introduced the Taguchi Method into the field of testing embedded software and developed the MOSTEST method. Since there are many input factors (e.g. sensor inputs), testing the embedded software is difficult especially in the combination tests, where the number of possible cases much exceeds the number of realistically testable cases (see the slide (below-left)). Thus in reality combination bugs inescapably remain. In the MOSTEST method, a software verification tool is used to generate the orthogonal array in TM suitable for the target software. User has to enter the relationships between condition factors and configuration factors, simple factors and their levels, and state-transition relations. Using the orthogonal array thus automatically generated, the test cases for bug verification are automatically generated. This method covers two-factor combinations 100%, and unintentionally three-factor combinations 80-60% and four-

factor combinations 50-30%, the Author says.



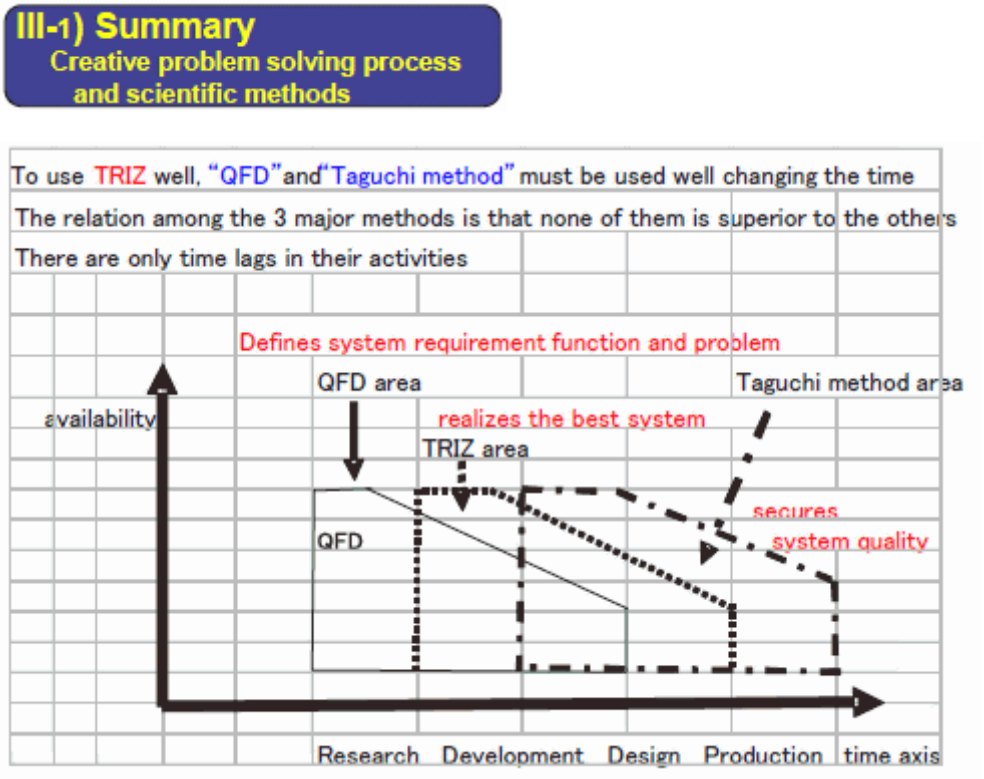


In the slide (right), the Author criticizes the predominant 'Standard' way of doing research/development /design by people who do not use Taguchi Method. The conventional way is essentially trial-and-error cycles (of process 1)-6)), even though various methods/tools are used in the process of each cycle. The Author states: "Let's immediately stop with such an inefficient approach and management that lacks logic!"

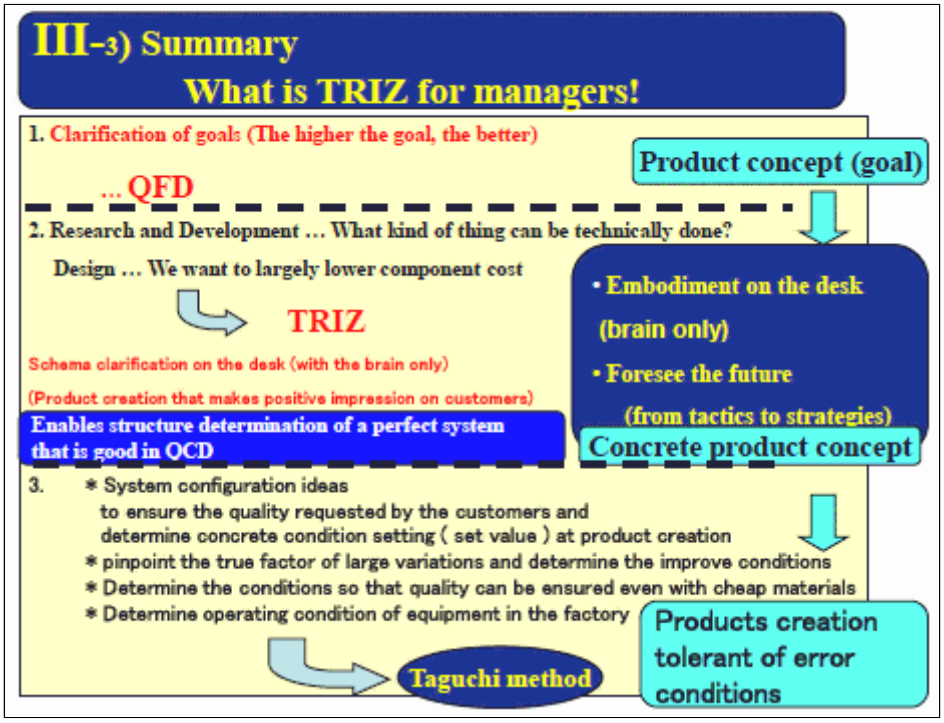
The Author is now concluding the Keynote by using three slides.

The slide (right) shows his statement of the position of TRIZ in the creative problem solving process. I will quote the Authors statement here:

> To use TRIZ well, "QFD" and "Taguchi method" must be used well changing the time. The relation among the 3 major methods is that none of them is superior to the others. There are only time lags in their activities.



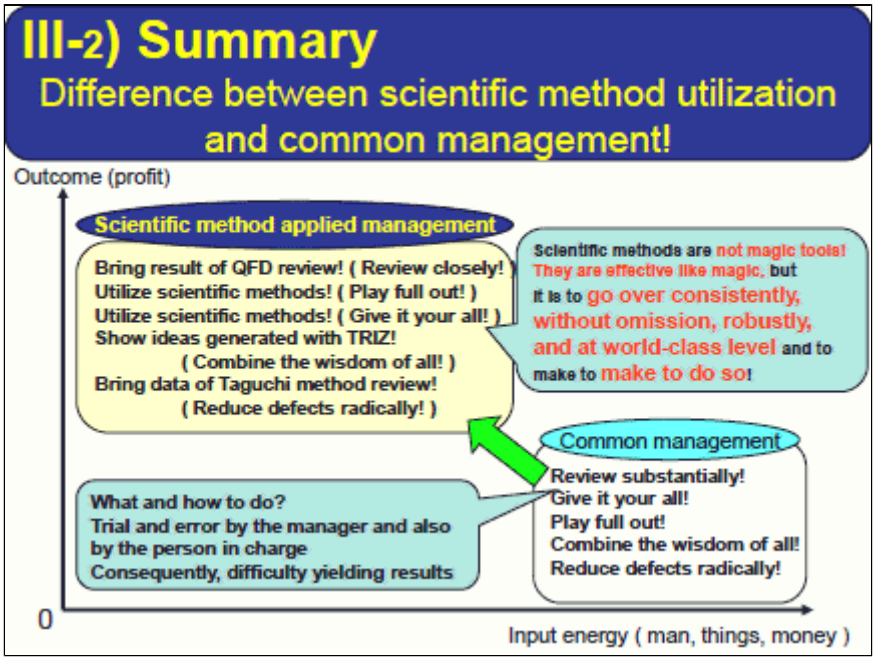
The slide (right) summarizes the purposes and usages of the three major methods.
QFD is to clarify the product concept (or goal of the product development); the higher the goal, the better.
TRIZ is then to be used for developing the concrete product concept, which must be technically possible overcoming technical difficulties and also impressive for customers. This process is done on the desk (with brain only).
And then Taguchi method is used for creating products which are tolerant of error conditions.



On these bases the final slide (right) illustrates the way of management of product development with scientific methods, in comparison with common management. The manager should tell to their people:

"Bring me the result of QFD review!" (instead of just saying 'Review closely' in the common management)
"Utilize the scientific methods!" (instead of saying 'Play full out!' or 'Give it your all!')
"Show ideas generated with TRIZ!" (instead of saying 'Combine the wisdom of all!)
"Bring me the data of Taguchi method review!" (instead of saying 'Reduce defects radically!')

With use of such a management, input energy (in terms of man, things, and money) can be reduced, while the outcome (i.e. profit) can be increased.



*** This Keynote Lecture states the Author's belief very clearly and logically. Since he summarizes his talk well, I will not repeat it. This is really a strong message for managers and engineers, not only those who do not know TRIZ but also those who know TRIZ well.
During 2001-2007 the Author actually built and led a strong group of process innovation using these scientific methods and promoted a company wide movement in PCC and in Panasonic Corp. It is interesting that he established the scientific methods in the reverse way, i.e., TM, TRIZ, and then QFD, when he organized the movement in PCC. See the Author's Invited Talk at Japan TRIZ Symposium 2006 .

[The original presentation slides of this Special Interest Lecture are already posted in the Official Web site of Japan TRIZ Society . In this Web site "TRIZ Home Page in Japan", I have posted a new HTML page of this presentation for convenience of reference . (Dec. 30, 2010)]

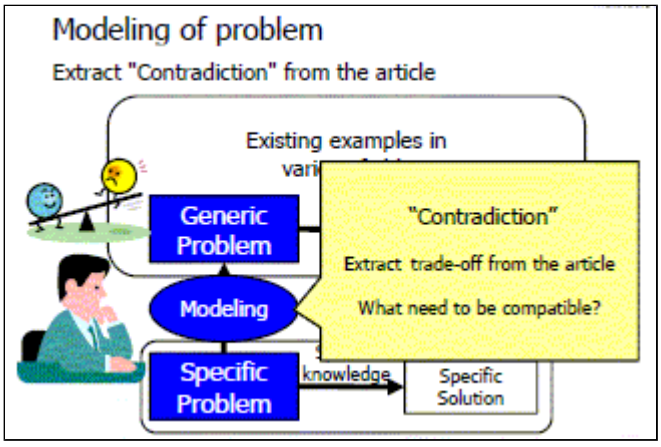
Hisataka Izawa, Narumi Nagase, and Shusei Kunitomo (Sony Corp.) [J12, O-15] gave an Oral presentation

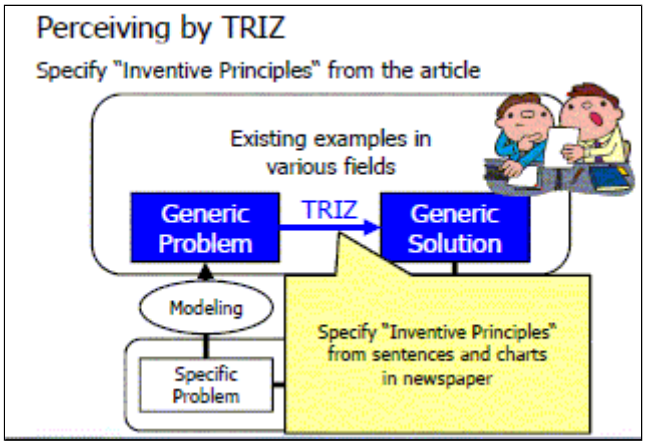
with the title of "Approach of Reverse TRIZ Using Industry System Newspaper Articles". I missed attending at this presentation. The presentation won (one of the four) 'Best presentation for me' Award by the voting of the Symposium participants. The PDF files of the presentation slides are posted publicly in the Official Web site of Japan TRIZ Society. I will quote the Authors' Abstract first:

> The problem solving that uses the TRIZ method is effective for the improvement of the product and the technology. In addition, it is effective for the problem solving in the research and development stage without the experience enough.
> However, it starts solving it only by experiencing his/her specialized field for the person who doesn't know knowledge and the use method of TRIZ. Cases and the explanations of TRIZ that offers them easiness to understand and sympathy are requested.
> However, it is not easy. In the research and development, the specialized field of anyone is narrow. On the other hand, the entire section takes up various topics widely.
>
> An approach which offered them an attractive explanation has begun. An industry system newspaper that is familiar with latest information is used. Development articles on the corresponding technology are extracted. Next, it arranges it adding the analysis with TRIZ. Case and explanations of TRIZ are made.
> Those who research and develop it learn cases and explanations of their own specialized fields.
> It introduces understanding by a current content of execution and a continuous approach.

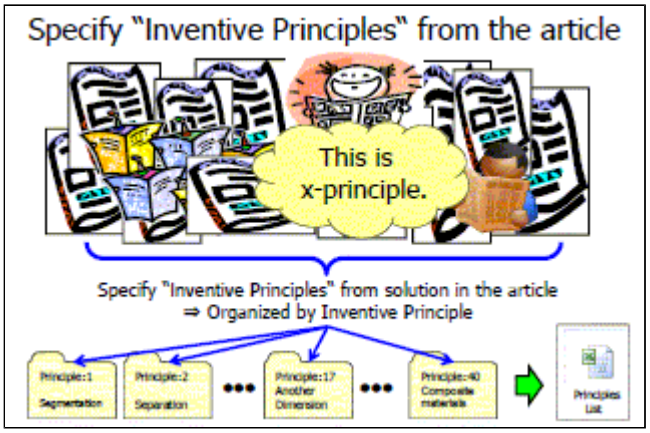
The Authors have been working for many years for promoting TRIZ in their company. As usual for such in-company promoters, they gave training seminars and coached projects with TRIZ. However, they felt much difficulty in penetrating TRIZ into their R&D people. The slide (right) shows their trials for making TRIZ easier to understand. Trying to explain TRIZ in a general and consistent manner is possible in some fields like mechanical engineering, but difficult in other fields like materials, systems, software, etc. Trying to explain TRIZ more specifically by using published case studies and patents is nice, but such information source is rather limited. Thus, in the present work, the Authors introduced the way of explaining TRIZ by use of the reverse analyses of new products/services reported in industry newspapers. [*** Some parts of the slides in English may not be clear enough for you at first, I am afraid. But please understand the Authors' intentions from the overall contexts of the presentation.]

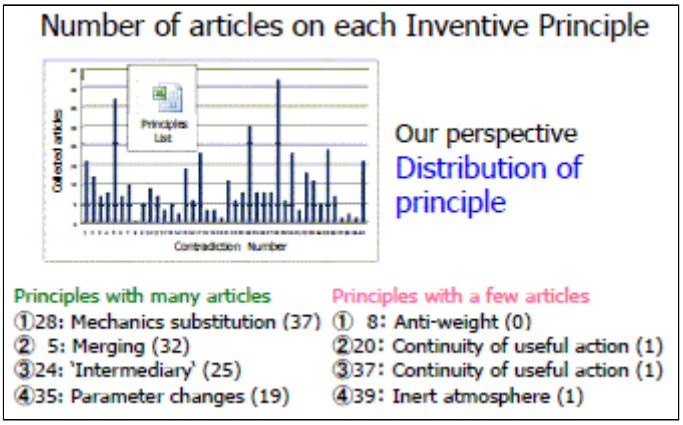
The following slides (below-left and below-right) demonstrate how the newspaper articles are analyzed in the eyes of TRIZ. The Authors explain their analysis method in the framework of the Four-Box Scheme. Reading each article, they first try to understand the specific problem of the case and to understand what difficulty/trade-off problem/contradiction the inventors identified in their process of new product development. Then the Authors try to understand the essence of the inventor's new solutions in terms of the 40 Inventive Principles in TRIZ. Such a process of reverse analysis of inventions is well known and, so to speak, traditional in TRIZ since Altshuller's original work.



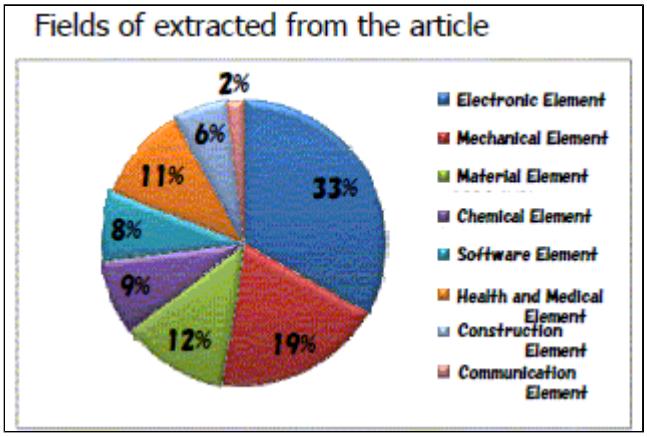


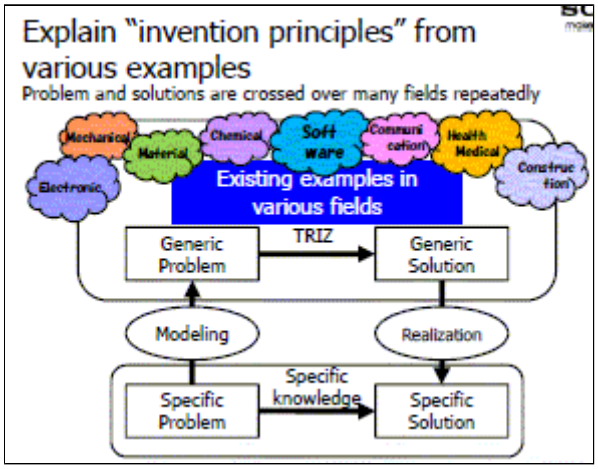
Such analyses of newspaper articles can be accumulated to build up the examples of applying TRIZ Inventive Principles. In the slide (below-right), number of articles related to each Inventive Principle is demonstrated.



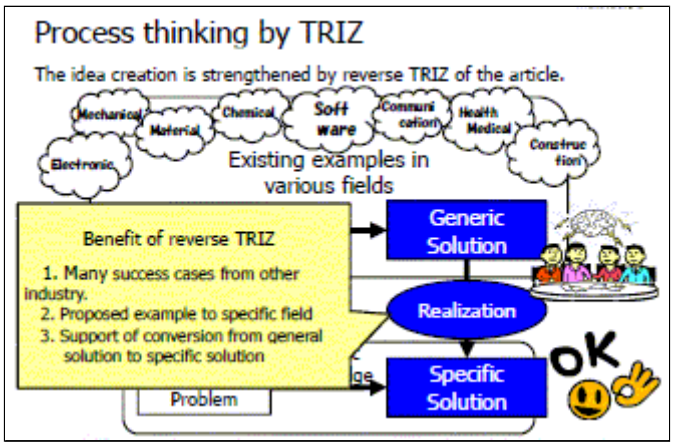


As shown in the slide (below-left), the fields of the newspaper articles the Authors have analyzed are distributed widely. Thus the Authors have developed a rich knowledge base of nice application examples of the Inventive Principles in these various fields of industry (slide (below-right)).



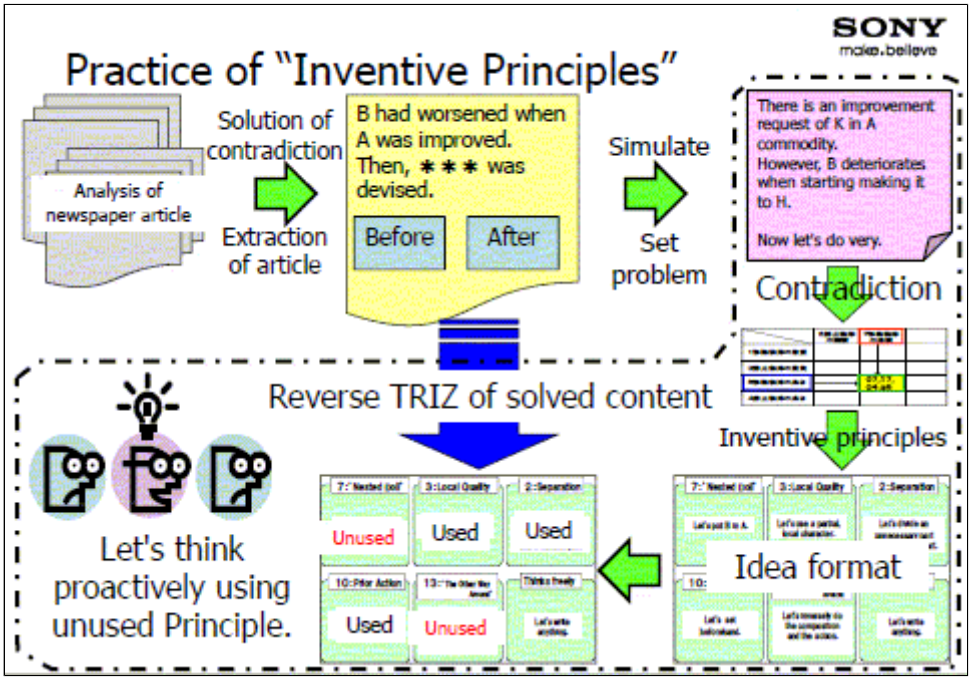


The third process of problem solving in the TRIZ Four-Box Scheme (slide (right)) is the Realization of Generic Solution (i.e. the Principle's suggestion) into Specific Solution (i.e. the new product/service). Since the newspaper articles describe new products/services of much interest in detail, we can have a nice collection of examples of results of this Realization step, the Authors say. The slide (right) mentions the benefits of the reverse analysis with TRIZ. We can understand many real success cases from the eyes of TRIZ.

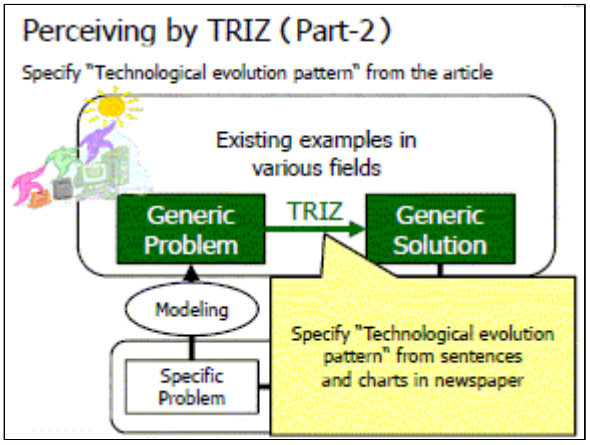


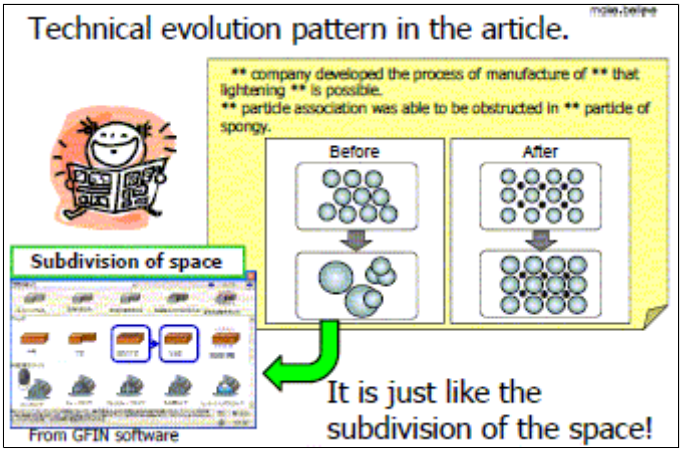
Case studies of such reverse TRIZ analyses have been regularly posted in their intranet Web site for promoting TRIZ. Such case studies have been used also in the seminars for training idea generation capabilities. The scheme is shown in the slide (right). On the basis of the TRIZ reverse analysis of a newspaper article, a problem is set up as a training case study. Groups of trainee engineers solve the

problem by using TRIZ, typically with the Contradiction Matrix and Inventive Problems, to generate multiple of solutions. The trainees' ideas are checked with the inventor's solution. It is also interesting to think further proactively about the problem to generate more ideas using unused TRIZ Principles.

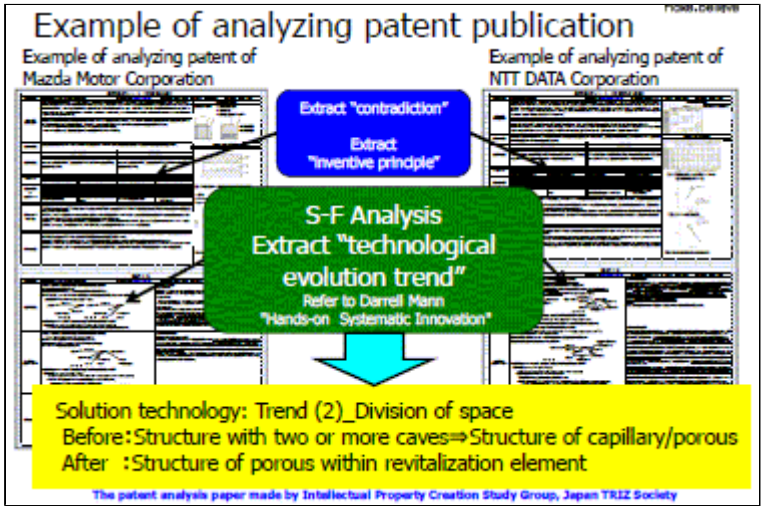


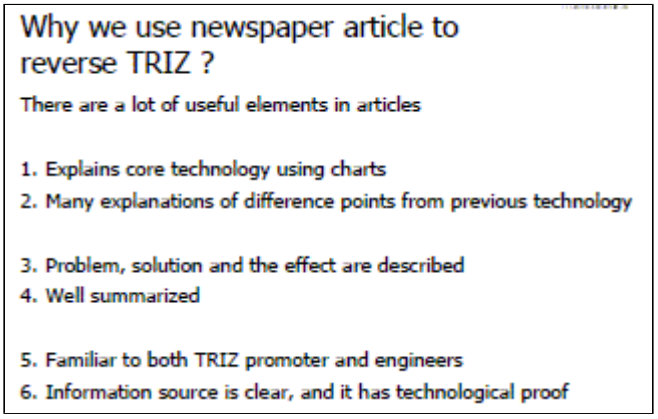
The Authors also applied another TRIZ way of understanding the essence of the invention reported in the newspaper article. They used the Trends of Evolution of Technical Systems (slide (below-left)). Reading the articles, they try to understand the essence of the inventions in terms of the Trends of Evolution, which may be referred in textbooks (e.g., Darrell Mann's HOSI) or in software tools (e.g., GFIN) (slide (below-left)).



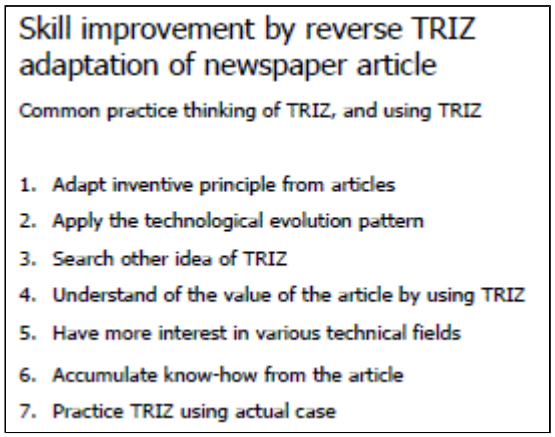


The Authors mentioned that they also analyzed a number of patent journals (slide (below-left)). The analysis work has been done in collaboration in the Intellectual Property Creation Study Group of Japan TRIZ Society, and was reported by K. Hasegawa et al. [Engl] in the Symposium. The present Authors, however, have concluded that articles in industry newspapers are superior to the patent journals as the documents to be reversely analyzed with TRIZ. The slide (below-right) describes their reasoning. Among these points, most important is the familiarity of or even sensational interest in the new products for both common engineers and TRIZ promoters, I feel. Furthermore, such new products are publicly described in detail in various information sources, other than the newspaper article, and are already proved to be success in technology.





In the slide (below-left), the Authors have reported the good effects of reverse TRIZ study of newspaper articles on the skill of engineers and promoters. As you see in these items, the reverse TRIZ study has given (and has the possibilities to give more widely) good influences on the persons who make the analysis and on many more persons who read and learn the results. The slide (below-right) is the summary of presentation by the Authors. As written at the bottom of this slide, the Authors demonstrated several real examples of their reverse TRIZ analysis during the presentation. [They are not included in the presentation file of the Proceedings.]



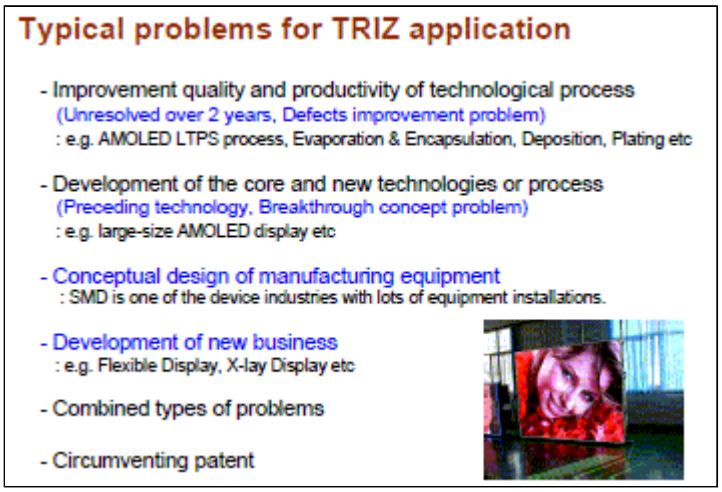
[*** This is a nice way of studying, training, penetrating, and promoting TRIZ, I realized. I recall the Keynote Lecture by Mahmoud Karimi; every week in a newspaper he wrote a column of introducing interesting products/services/ideas from the eyes of TRIZ. Mr. Karimi published his work in newspapers/magazines, while the present Authors posted and showed their work in their company. However, the contents of work may not be so much different in these two activities, I suppose. We can also carry out similar activities in our own place, e.g., in our companies, in our schools, in our joint working teams, in our Web sites, etc.]

SeHo Cheong, Len Kaplan, and Valeriy Prushinskiy (Samsung Mobile Display, South Korea) [E01, O-13] gave an Oral presentation with the title of "TRIZ at SMD: Unique Situation, Unique Goals, Unique Approaches".

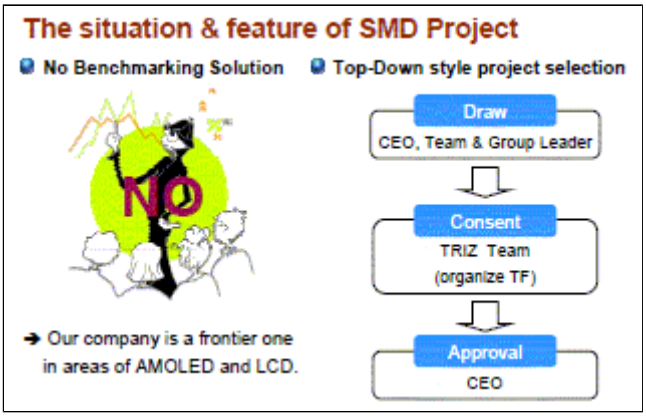
> TRIZ team at Samsung Mobile Display works in unique situation. Usually, TRIZ teams solve problems, "How to improve on industry achievements?" SMD, however, possesses the position of technological leader. As a result, TRIZ problems here are "How to make things that nobody in industry has made yet?" or "How to produce absolutely new product or implement absolutely new process?" The unique goals of SMD TRIZ team are based on ultimate objective, "Remain the Global #1 in displays." SMD TRIZ team applies TRIZ to the challenges the team faces. As a result, the team develops and implements the unique approaches to its day-by-day work.

[*** As you read, the Authors' Abstract is really challenging. Thus, I would like to trace what they say in the presentation and what are their intended goals and their approaches.] Skipping the part of their mentioning the situations, the slide (below-left) writes about their intended goals. It is clear that they want to "Remain the Global #1 in displays". Hence they want to apply TRIZ mainly to the projects for creating new products/services, instead of those for defect improvements. The slide (below-left) lists typical problems for

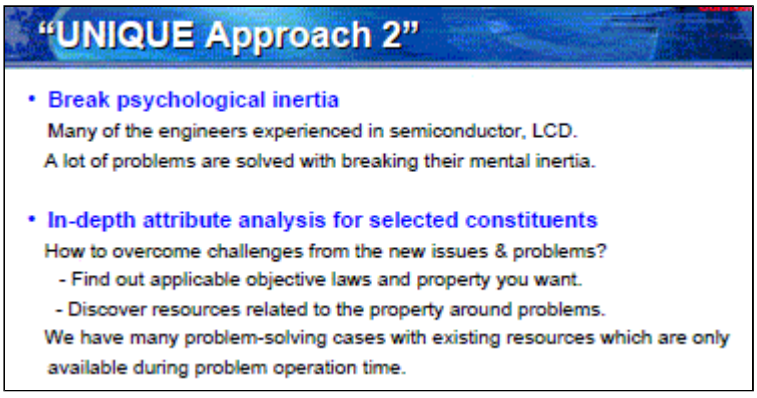
TRZ application; the Authors emphasize the types of their priority in blue fonts.

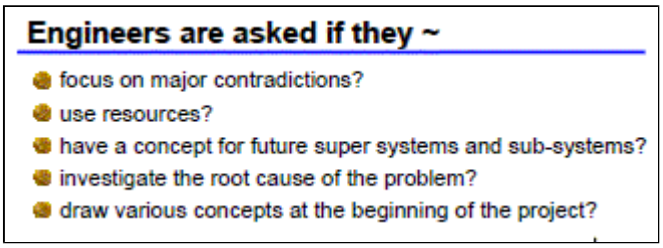


Now the Authors talk about their approaches. First is to persuade CEO and bring CEO's messages to the project (slide (below-left)). The way of selecting TRIZ projects (and TRIZ task forces) is shown in the slide (below-right). Plan (or 'Draw') is made by CEO, executives, and TRIZ Team leader, and then the Task Force (for collaboration of multiple divisions) is organized by the leadership of the TRIZ Team, and the project is approved by CEO to start.

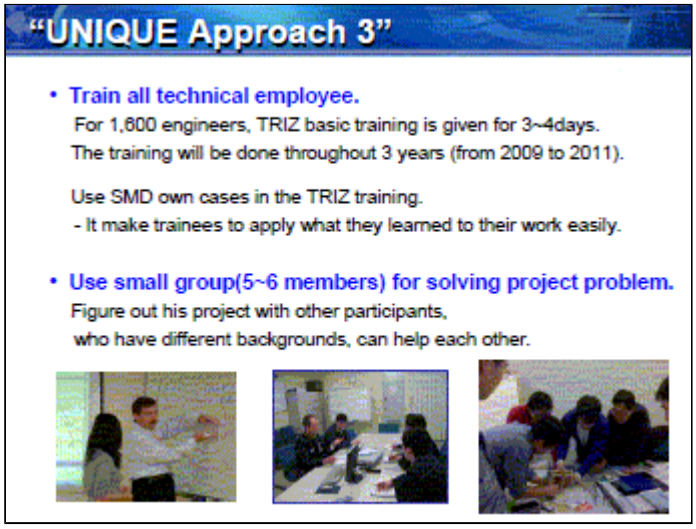


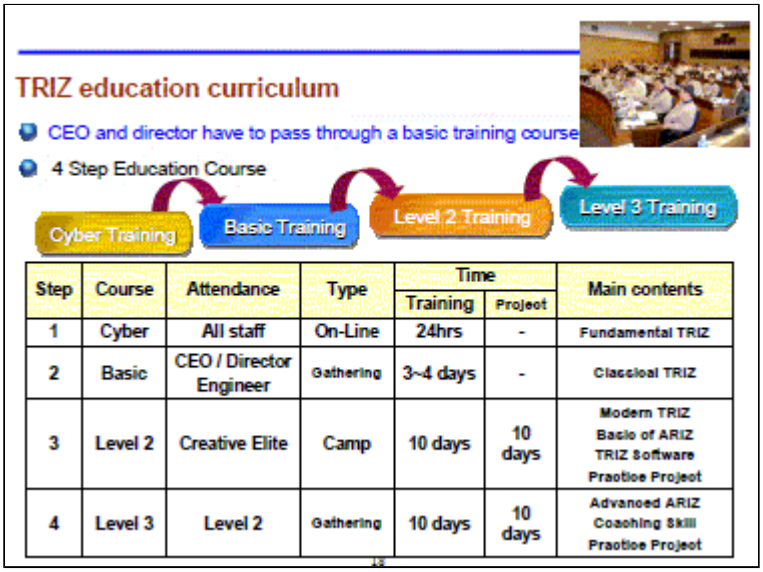
The second approach (slide (below-left)) seems to be related to the way of in-depth thinking. The slide (below-right) is very interesting. It lists up the basic attitudes/ways of thinking, written in general terms but deeply supported by TRIZ.



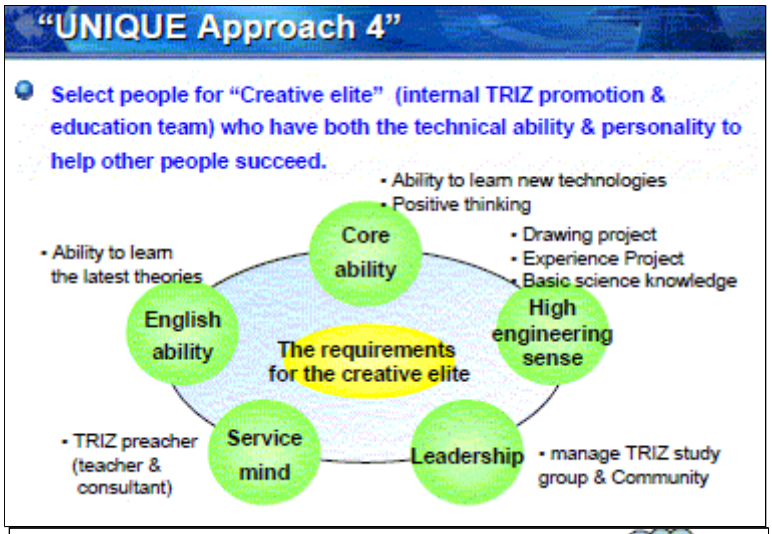


Their third approach is the training and education of TRIZ (slide (below-left)). They give all technical employee the basic training of 3-4 days. The TRIZ education curriculum is shown in the slide (belo-right). At the fundamental level, they (or all the Samsung group companies) use the TRIZ e-learning course developed in Samsung. Then at Step 2, the basic course is given to all the engineers (and CEO and directors) for 3-4 days on Classical TRIZ. Further they operate the (MATRIZ approval) Level 2 course to train 'Creative Elite', and also Level 3 course for training TRIZ specialists. As shown in the slide (below-left), they actively use small groups (of 5-6 members) for solving problems in daily projects.



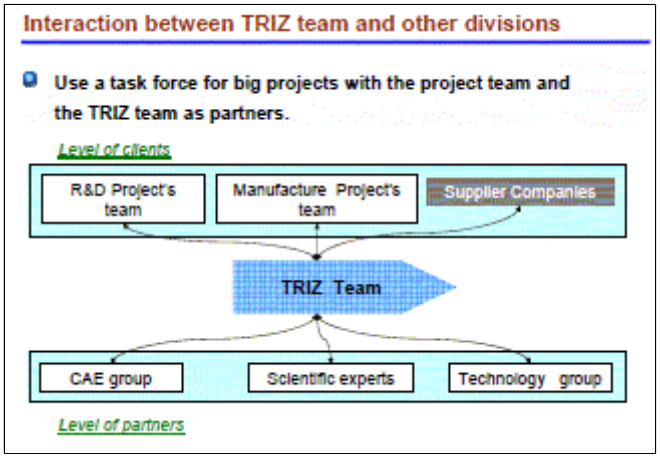


Their fourth Approach seems to be related to people. The slide (below-left) writes that they selected people for 'Creative Elite'. The five aspects of requirements for the Creative Elite are interesting. Creative Elites are expected to have both technical ability and personality to help other people succeed, and to work as members of internal TRIZ promotion & educational team. In year 2009, they have brought up 20 engineers as such 'Creative Elites'.

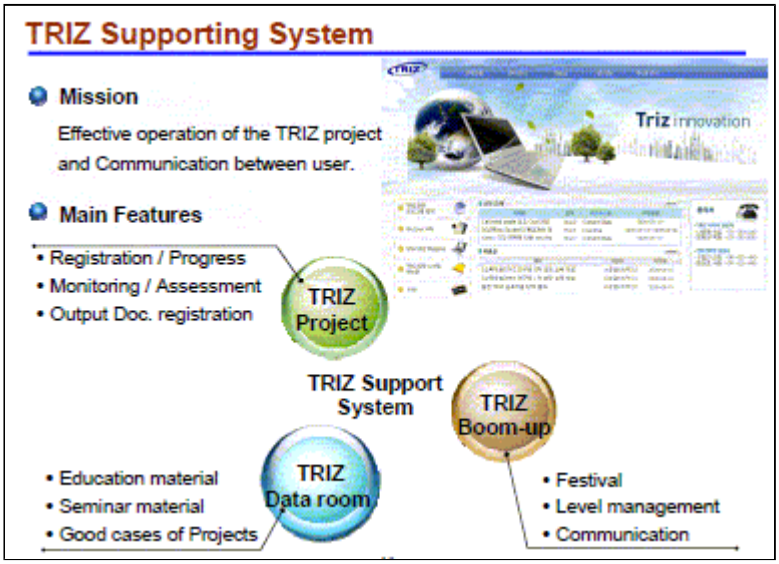


The way of organizing the cooperation between the TRIZ team and other divisions is also important. The slide (right) show the case of forming task forces for company's big projects. R&D project team, Manufacture project team, and Supplier companies join at the level of clients, while the TRIZ team as well as CAE group, Scientific experts, and Technology group join at the level of partners. The

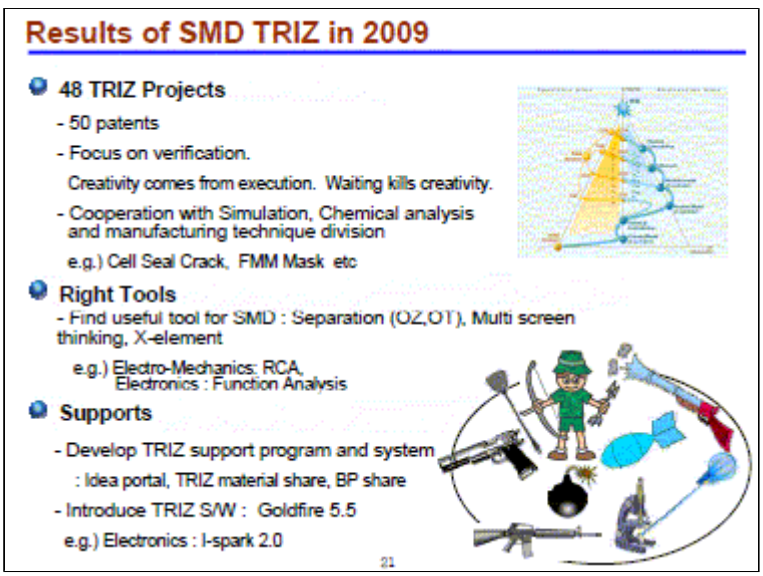
interaction among all these people/groups seems to be important for the success of big projects.

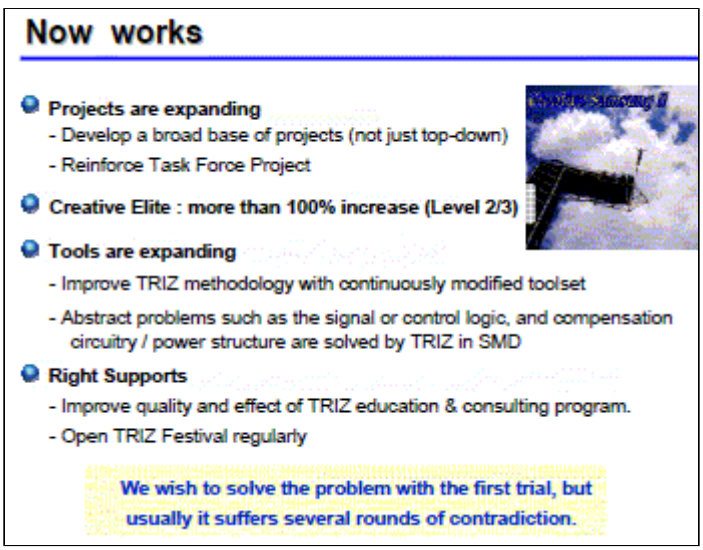


Their fifth approach is the formation of TRIZ Supporting System in a wide sense (slide (below-left)). Its mission is to serve for effective operation of the TRIZ project and communication among users. TRIZ projects are supported by the IT system in the aspects as shown in the figure. The TRIZ Supporting System also serve as the 'Data room' where education materials, seminar materials, and case studies of projects, etc. are stored. Features for 'TRIZ Boom-up' are also operated. TRIZ Festival in SMD (Samson Mobile Display) is held every year (slide (below-right)). Samsung group companies join together in Samsung TRIZ Association (STA) and operate STA TRIZ Webzine, for communication and sharing the results together.



In the following two slides (below) the Authors summarize their TRIZ results in 2009 and the TRIZ status. They carried out 48 TRIZ Projects in a year. Their projects, TRIZ promoters ('Creative Elite'), tools, and support system, etc. are expanding, they say.



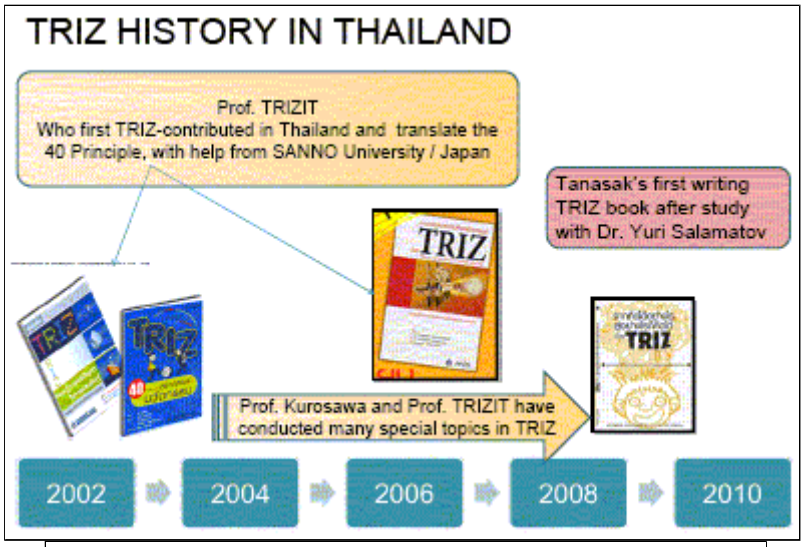


[*** It is quite impressive that in SMD (and probably also in other Samsung group companies) TRIZ has been promoted strategically and utilized well in the company's big projects. We can learn a lot from this excellent presentation.]

Tanasak Pheunghua (The Inventor Development Co., Thailand) [E02, P-B4] gave a Poster presentation with the title of "**Implementing TRIZ in Thailand**". The Author's Abstract is quoted here first:

> In Thailand TRIZ has become known gradually for these several years as a possible way for innovation. For introducing TRIZ, different approaches are tried in the industries in Thailand. Most common approach is to start with the training of engineers in TRIZ, and is still very far from possible product or process innovation they want to achieve. Project-based learning is another approach being tried where coaching or consulting by experienced practitioners is needed. All the approaches try to follow the TRIZ methodology, but they seem not understood well by the students and their organizations. People and companies use mostly conventional tools and conventional thinking ways. Such an old paradigm in problem solving is still the big barriers against the penetration of TRIZ. How to make people understood that TRIZ way of thinking process should replace the conventional one is the main issue. The present paper describes the approaches we are trying, and the barriers against them, for achieving the ideal final results of developing people and businesses in Thailand's industry.

In the slide (below-left) the Author introduces the TRIZ History in his home country, Thailand. In its early stage, Mr. Shinsuke Kurosawa (SANNO Institute of Management, at that time) made some guidance to them, through some Japan-Thailand Cooperation Program. The slide (below-right) summarizes the Author's experiences of training TRIZ in various fields of industries.



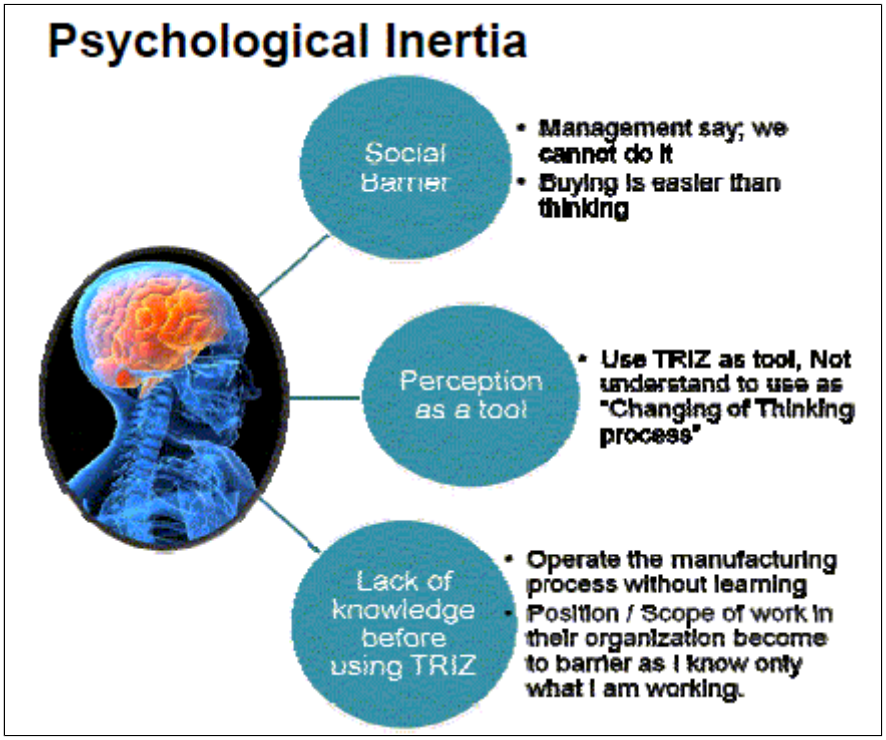
TRIZ Training Experienced (Y2007 – Y2010)

Segment	Training Topic		
	Introduction to TRIZ (1 -2 Days)	Advanced Level (Patent Study, Theory of Technology Evolution, etc.)	Project Base Training
Agriculture & Food Product	Sc / Re / B	-	-
Automotive Part	E	E	E
Building Material	Sc / Re	Sc / Re	Sc / Re
Maintenance Services	B / E	-	E
Packaging	B / E	E	E
Education Section	T	-	-

* Sc = Scientific, Re = Researcher, E = Engineer, T = Teacher, B = Business

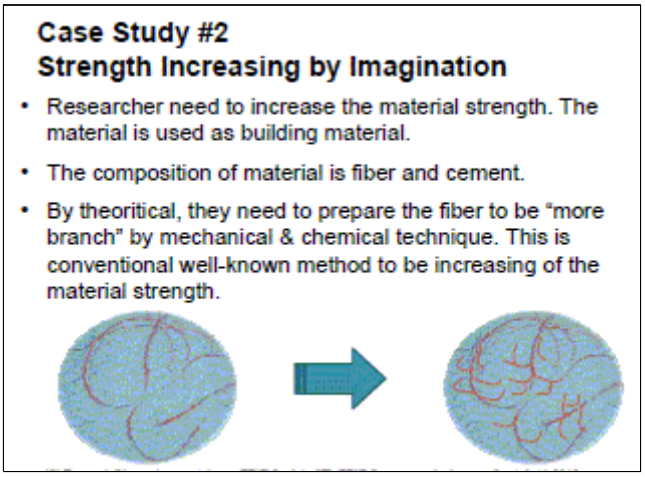
The Author feels a lot of difficulty in penetrating TRIZ to the people and in encouraging innovations in his country,

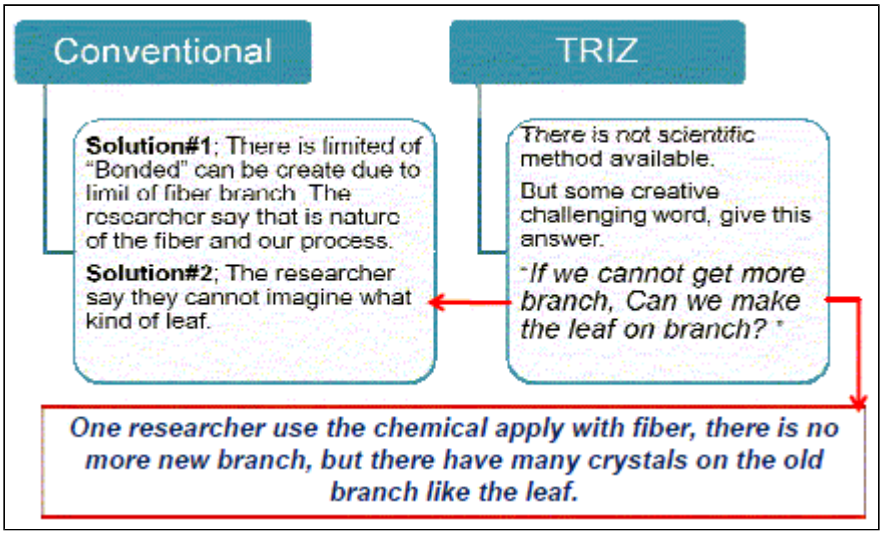
as he describes in his Abstract. The main difficulty stems from the Psychological Inertia among various people (see slide (right)). First is in managers; they often say buying (some technologies and services) is easier than thinking (to produce them for themselves). Second is in the (pioneering) engineers who met TRIZ already; they use TRIZ as a tool and do not understand the importance of changing the way of thinking. Third is in many engineers and workers; they do not have a wide scope of knowledge and are not eager at expanding their knowledge.

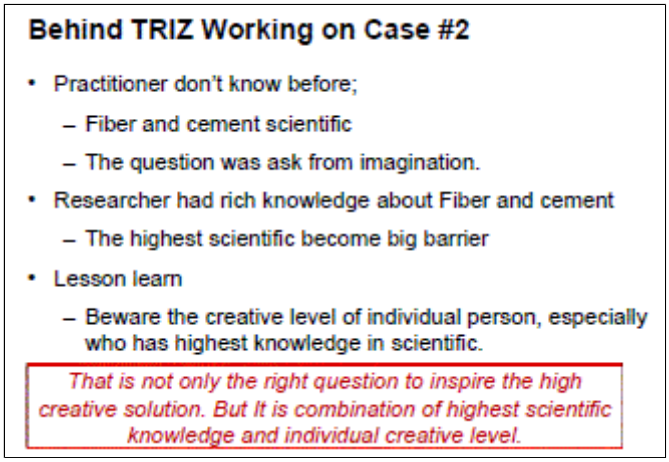


In the presentation he showed 2 case studies for illustrating examples of such Psychological Inertia. Case Study #2 is shown here.

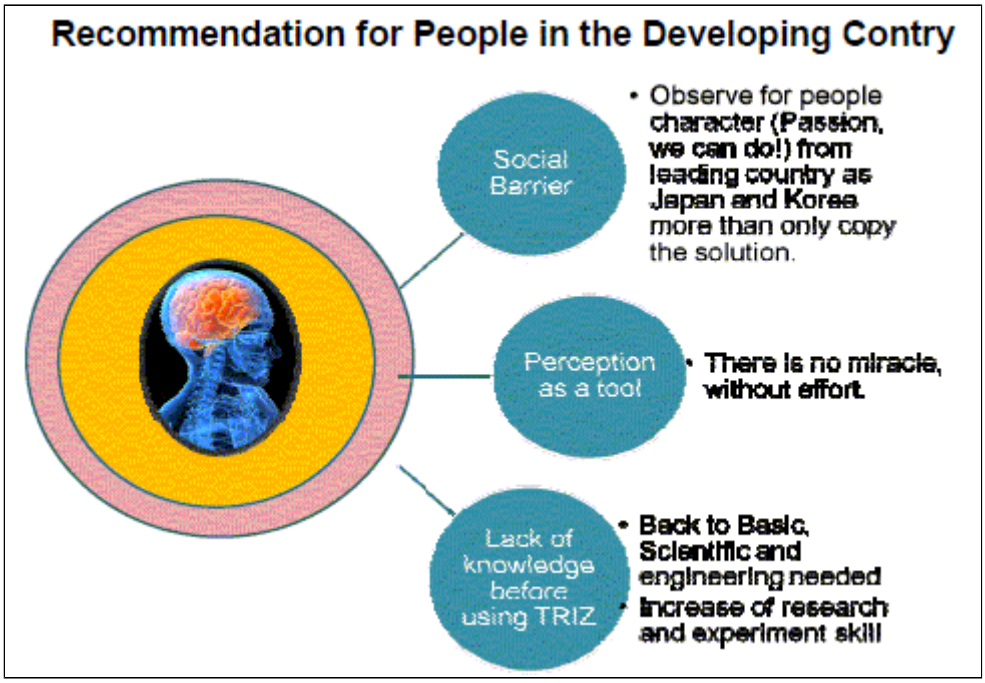
The task they wanted to achieve in this case is to 'Increase the strength of cement with fiber by making more branches in the fiber' (slide (right)). The arguments between a researcher with conventional thinking and a non-specialist with TRIZ thinking are shown in the slide (below-left). The researcher said "Our fibers do not have so much branches. There is no way of increasing the cement strength by increasing the fiber branches". The TRIZ person said "If we cannot get more branches, can we make leaves on the branches?" The researcher could not imagine the leaves. But another researcher made some chemical treatment on the fiber; the fibers do not have more branches but have many crystals on their sides just like leaves. In this slide (below-right) the Author writes the lesson learnt from this case. He concluded that high scientific knowledge need to be combined with creative thinking for obtaining a creative solution.

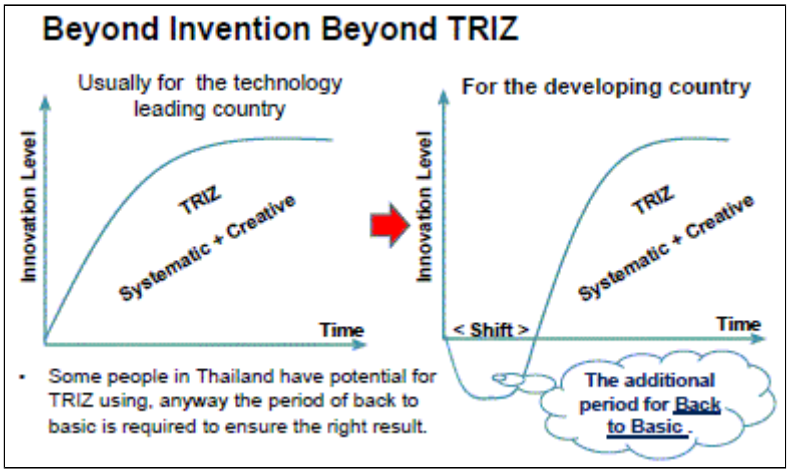


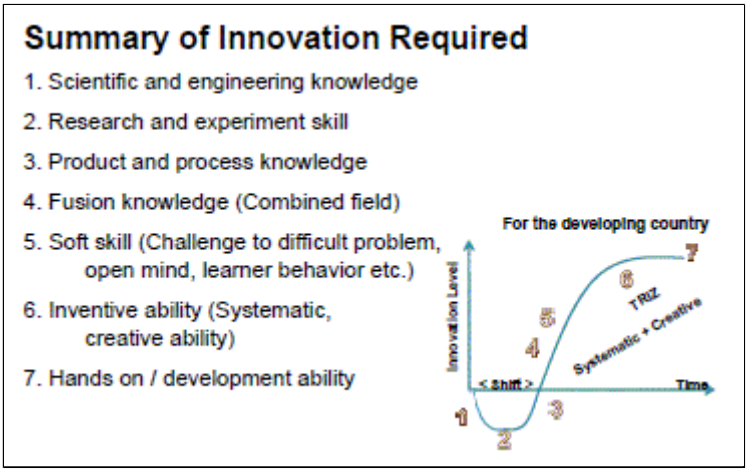




He shows his recommendations for people in developing countries in the slide (right). For overcoming the social Psychological Inertia, he proposes to observe people's characters (such as passion) in leading countries like Japan and Korea. Concerning to the perception of TRIZ, he suggests "No miracle without efforts". Concerning to the background knowledge, he proposes to study and do research in science and engineering. On this point, the Author explains some more in the slide (below-left). His slogan is "Back to Basic" even if it seems to make some delay in the person's (or organization's) growth. In the slide (below-right) he gives summary. He lists the innovations required in his home country (and other developing countries). The seven requirements are related to the growth model (of a person or an organization) in respect to the innovative capability.







[*** The Author has given this presentation in a sincere and passionate attitude for his home country. I wish this presentation be learned by many people in the world.]

Top of this page	Review of Yamaguchi's lecture	Yamaguchi's presentation	Rev. of H. Izawa	Rev. of S.H. Cheong	Rev.of T. Pheunghua	Japanese page

Personal Report (Top)	Part A. Keynotes	Part B. Methods in TRIZ	Part C. Integration with other methods	Part D. Case Studies	Part E. Promotion	Part F. Education and Academia
Part G. Patent studies	Part H. Non-technical		TRIZ Symp. 2010 Official Page (Preparation)	TRIZ Symp. 2010 Official Page (Results)	Japan TRIZ Society Official Site	Japanese page of Personal Report (Top)

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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

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