The 4th Japan Invention Machine User Group Meeting

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(Editor's note: The PDF documents are in Japanese, but the summary below gives and English abstract. Readers who cannot read Japanese may find it helpful to look at the illustrations in the papers.)

- Wednesday, September 10th, 2003 -

Special user presentation:

"How we did apply TRIZ at Samsung"
Samsung Advanced Institute of Technology
Mr. HYO JUNE KIM


Applying TRIZ at Company (215KB)
http://www.internetclub.ne.jp/IM/service/2003/m_0925_k.pdf

<Summary> During 3 months, [of observing TRIZ consultants] 'he' could see successful consulting result. Field engineer and researcher [were] satisfied [with] the provided ideas. But 'he' could not find any trace of using TRIZ. 'He' thought, "If I had enough experience of consulting during 30 years, too, I could also generate such an idea. During three months, I could not see any trace of using 40 principles or Su-Field Analysis or 76 standard solutions or ARIZ. There is no TRIZ."

After long enough time had passed, I could not help recognizing them as a TRIZ expert. "However clever they are with great experience, it is impossible for human to generate such many ideas of good quality in such a short time without any methodology. In TRIZ, there must be something special which I don't know."

During last 3 years, their TRIZ team did successful consulting activities. The economic benefit after applying TRIZ ideas is impossible to count (more than 1 billion US$). But they did also build systematic infrastructure about TRIZ.

- Formalized TRIZ consulting process
- Systematic and attractive Education course

- Research about TRIZ
- As a result, deeper understanding of TRIZ ability
- TRIZ user meeting

In any situation of a TRIZ team at a company, 4 things are necessary for surviving:

1. Calculated benefit money from mass production line every two months
2. Breakthrough patent from research field every half a year
3. Systematic and practical education course
4. Deep understanding and research about TRIZ

For #1 and #2, it could be done by Russian TRIZ experts at the initial stage of the TRIZ activity. But the IFR (Ideal Final Result) of TRIZ activity at a company is “TRIZ can be applied directly into research and development team without the help of the TRIZ team”. For such a reason, #3 is a critical point. But without #4, #3 is absolutely impossible. #3 and #4 are difficult problems. Almost such difficult problems usually have more than one contradiction.

At #3, there was the following contradiction: Education course must be short at the company. But it must be long enough to understand TRIZ. Usually, TRIZ is recognized as the most difficult methodology to understand and apply it on real fields after learning.

At #4, there is another contradiction: TRIZ understanding must be simple, because almost all the great theories are simple after understanding. A good example is thermodynamics. But it seems that there are too many tools in TRIZ. Sometimes it is too difficult to understand the co-relation between various tools of TRIZ and organize the right order of action. It’s another contradiction for solving real problems using these tools in a short time.

At this presentation, some solutions to such contradictions are provided. The presentation will be based on practical experience for successful TRIZ applying, not theoretical.

“Best Practices of TRIZ at Samsung – DVD pickup, refrigerator, PDP, etc.”

Samsung Advanced Institute of Technology
Mr. HYO JUNE KIM
NIKOLAY SHPAKOVSKY, PhD

Decreasing Cost of DVD Pickup (157KB)

http://www.internetclub.ne.jp/IM/service/2003/m_0925_l.pdf

 Increasing Efficiency of PDP (307KB)
http://www.internetclub.ne.jp/IM/service/2003/m_0925_m.pdf

 Refrigerate – "Zipel" (526KB)
http://www.internetclub.ne.jp/IM/service/2003/m_0925_n.pdf

 Patent Avoiding – Washing Machine (143KB)
http://www.internetclub.ne.jp/IM/service/2003/m_0925_o.pdf

 Technology Evolution – From the Point of TRIZ View (128KB)
http://www.internetclub.ne.jp/IM/service/2003/m_0925_p.pdf

 Technology Evolution Diagram – Display System (834KB)
http://www.internetclub.ne.jp/IM/service/2003/m_0925_q.pdf

<Summary> Two years ago, a company tried to save the cost of DVD player pickup. Until that time, the competitor company's cost was 21 US$, and that company's cost was 11.7 US$. Of course, the difference was big, but that company wanted to save more, because the DVD market was emerging with great speed and China's attack has started with extremely low price.

DVD pickup development team invited Russian TRIZ experts to decrease the cost of DVD pickup. They had to change the design although they were not experts in optics field. Fortunately, there was a young Russian optics engineer in that team.

After 5 months consulting, they developed a new design of DVD pickup. This design was beyond the mental inertia of a usual optics engineer. Cost was decreased from 11.7 US$ to 7.0 US$ and that design has become the basic platform at this company now. Every year that company produces more than 5 million DVD players. If the DVD pickup at a computer system is considered, more than 10 million pickup modules are produced every year. This development was called Sellino project.

Expensive side-by-side type refrigerator usually has a 'home-bar' at the front door panel. This home-bar was designed to fold and open with the

right angle. For this purpose, they used link bars made of stainless steel at two edge sides. The competitor company used 2 stainless steel bars with moving end parts, which was the patent of GE. So, this company used 4 stainless steel bars with fixed end parts and a joint between the two steel bars. As stainless steel bar is made of expensive metal, they wanted to decrease the cost.
So they asked the TRIZ experts to solve such a cost reduction problem. The TRIZ experts provided IFR (Ideal Final Result) with 'zero' cost instead of reduced cost. The new home-bar structure doesn't use steel bars at all, and customers even can enjoy a more convenient home-bar. TRIZ always wanted to provide 'Breakthrough Ideas', and not compromising ones.

In the PDP industry, the efficiency is the most critical point, and now an advanced PDP in the market has an efficiency value of 1.8[lm/w]. Whereas, this company had 1.5 [lm/w]. They requested TRIZ experts' consulting for another new idea of increasing the efficiency, because they already have done their best and could not wait another long time for good ideas.
TRIZ experts provided three main ideas. One idea has already been adopted and finished experiment. This new design will be applied to the market early next year. The second idea will be tested this year. This one will change every PDP display structure if the experiment result is good. PDP engineers are expecting more than 2[lm/w] with just a simple change. Everybody will think, "Why couldn't I think of such a simple and powerful design?" Usually, almost all the great inventions are like a "Columbus's Egg."
The last idea deals with barrier panel structure and manufacturing. This idea will be tested next year. TRIZ experts are expecting an increase of efficiency by two times. Via such actions, that company is keeping continuous initiative for breakthrough at the market.

- Thursday, September 11th, 2003 -

Keynote speech:

“Creativity and Change in Thinking”
Chiba University, Emeritus
Japan Creativity Society, Chairman
Prof. AKIRA TAGO

User presentation:

”Education Practice Using TRIZ for Bringing Up Creation Development Type Engineers”
http://www.internetclub.ne.jp/IM/service/2003/m_0925_a.pdf
Nagano National College of Technology,
Department of Mechanical Engineering
Prof. YORINOBU TOYA

<Summary> National technical junior colleges are engaged in engineering education aiming at upbringing practical engineers, and have been conducting “Manufacturing” education.
This time, it was tried to introduce TechOptimizer, a support software utilizing TRIZ, in order to practice education for learning an idea and creation method that brings forth something non-conventional and entirely new, instead of just acquiring knowledge and skills to make things.
The results of “Creation Engineering Training” given to fourth graders at Department of Mechanical Engineering in Nagano National College of Technology are reported.

”Current Status of TRIZ Deployment at Nissan Motor Co., Ltd.”
http://www.internetclub.ne.jp/IM/service/2003/m_0925_b.pdf
Intellectual Property Department
Mr. TAKAHISA HIRADE
Mr. AKIRA MOCHIZUKI

<Summary> (Part 1)
At Nissan, a managerial-level staff in charge of TRIZ has been set up at the Intellectual Property Department from 1999, and organizing “TRIZ promotion members” within this department, spreading activities has been deployed with a central focus on the research center.
The background of TRIZ adoption and representative activities including

in-house education from the early period to the present is introduced.
(Part 2)
Concrete case studies like “How to deploy”, “How to acquire basic knowledge”, “How to master software operation”, etc. is introduced based on the experience of the presenter himself issuing a guideline for accomplishing tasks as a person in charge of TRIZ for the first time.
In addition, useful things for a beginner from information such as the many books and web sites on TRIZ is brought up to give an indication of the knowledge level that is necessary for a beginner to carry out TRIZ promotion activities.

”Improvement of Recycling-oriented Eco-friendly Packaging”
http://www.internetclub.ne.jp/IM/service/2003/m_0925_c.pdf
Ricoh Company, Ltd.,
Imaging Technology Division
Mr. KAZUO GOTO

<Summary> The in-house education of TRIZ at Ricoh has been firmly established.
In response to expectations from the promotional side to get results, this presentation is a case study on the circulation type eco-packing that an attendant at an internal TRIZ education lecture approached with his own problem.
The circulation type eco-packing, which is one of the environmental management of the Ricoh Group, was first introduced in 2001 centering on the metropolitan area, and developed to regional expansion, broadening of target models and addition of recycling items in 2002.
The problem taken up here originated with the addition of a recycling item, a part called “strap”, which was regarded as a disposable within the circulation type eco-packing of the former model.
The reason why this problem appeared on the market even it was sent out with confidence after enough evaluation, and what should have been done is analyzed utilizing TRIZ.

”Introduction of Patent Specification Generation Support Tool enabling utilization of TechOptimizer Report Files”
http://www.internetclub.ne.jp/IM/service/2003/m_0925_d.pdf
Case Study Applying to Patent Specification HyperTech Co.,Ltd.,
Intellectual Property

Mr. HIROYA YAMAGUCHI

<Summary> Development, sales and consulting of “Patent Creator”, a software tool for quality improvement of patent description and efficiency improvement of making one, has been conducted at HyperTech.

PatentCreator 3 (Ver.3.0) , an enhanced version of this tool, has been

shipped out corresponding to the recent patent law revision and adding the function to read concept information from the Report file output of TechOptimizer™.

”Current Status and Future Deployment of TRIZ Education at Yamaguchi University”
http://www.internetclub.ne.jp/IM/service/2003/m_0925_e.pdf
Yamaguchi University,
Department of Mechanical Engineering
Associate Prof. KEN KAMINISHI

<Summary> Report on the present conditions of TRIZ education which Yamaguchi University Graduate School of Science and Technology Studies postgraduate course carries out as a part of the MOT (Management Of Technology) education for graduate school students.
In addition, future development including TRIZ spread to local companies is described.

Special user presentation:

“KnowledgistUtilization at Samsung”
Samsung Advanced Institute of Technology
Mr. HYO JUNE KIM

- Friday, September 12th, 2003 -

Special lecture:
”New Understanding of TRIZ Entering the Steady Introductory Period”
http://www.internetclub.ne.jp/IM/service/2003/m_0925_f.pdf
Osaka Gakuin University,
Faculty of Informatics
Prof. TORU NAKAGAWA

<Summary> Now, the introduction of TRIZ into the Japanese companies exceeds gradual introduction (Slow-but-Steady Strategy) and it seems that it has entered the stage where the steady introduction (Steady Strategy) is possible (and appropriate).
The reason for this is that the understanding of TRIZ itself has grown up to an understanding in the Western and Japanese society from the introduction of understanding in the former Soviet Union, and that it has entered a stage where it is known broadly.
The following items shows these new understandings:
1. TRIZ textbook "Hands-On Systematic Innovation" (translation into Japanese in progress) by Darrell Mann
2. Modernization of TRIZ by their analysis of an American patents (new “contradiction matrix”, etc.)
3. Text book "Breakthrough Thinking" by Larry Ball
4. A system of solution generation method of USIT in Japan
Steady fixation at companies has become possible by deeply understanding and practicing "digested" TRIZ.

User presentation:

”TRIZ Method Introduction Situation and a Case Study Utilizing It to Product Development”

http://www.internetclub.ne.jp/IM/service/2003/m_0925_g.pdf

Panasonic Communications Co., Ltd.,
Corporate Development Process Innovation Division
Mr. NARUMI NAGASE

<Summary> At Panasonic Communications, it is aimed from 2001 on to fix the TRIZ technology in concept designing at research and development phase, and it is has been planned to propagate it.
The introduction of TRIZ methodology is also demonstrated as the company’s policy, and we have not only brought along internal full-time TRIZ technicians but also tackled solving on-site problems of development engineers in a practical and cooperative way.
At the presentation, a TRIZ methodology application case study on electronic board development of the latest model was introduced.

”Result and Turn of Events of the TRIZ Promotion Activities with Application Case

Studies”

http://www.internetclub.ne.jp/IM/service/2003/m_0925_h.pdf

Fuji Xerox Co., Ltd.,
DPSC, Research & Development Center
Mr. SHIGERU KASUYA
Mr. KATSUMI SAKAMAKI

<Summary> At Fuji Xerox, the name of the activity group was changed to TRIZ & Creation Methodology Research Committee at the start of this fiscal year in order to
make the activity one that incorporates also other creativity methodologies,
and they are planning to expand their activities of practical use.
Based on this policy, the following case study analysis and four themes of three case studies will be introduced this time:

1 Case studies at Fuji Xerox, degree of effectiveness and device points in future deployment

2 Two case studies on paper handling of copier/printer as examples of technology development

3 Management case study applying a new technique of TRIZ

“Approach to TRIZ/USIT Related Research and Education at the University”

http://www.internetclub.ne.jp/IM/service/2003/m_0925_i.pdf

Kanto Gakuin University,
Department of Mechanical Engineering
Prof. HARUHIKO IIZUKA
Mr. MORIO FUJII

<Summary> Approach to TRIZ/USIT related research and education at Mechanical Engineering Department of Kanto Gakuin University presenting new application examples "Development of PET Bottle Collection Machine" and "Development of a Care Car with Stairs Elevator Ability" from case studies of product development.

”There is no TRIZ that cannot be Utilized!”

http://www.internetclub.ne.jp/IM/service/2003/m_0925_j.pdf

IDEA Co., Ltd.
Mr. HIRO HAYASHI

<Summary> IDEA Co., Ltd. is a company where the TRIZ Business Department of ITEC International Ltd. became independent on April 1, 2003.
I have been involved with new product development by TRIZ since the release of the English version TechOptimizer™ 2.5 in 1998.

How can you achieve the best results in short terms?

Where do you make use of the TRIZ theory?

How can you create a relevant idea?

I have been researching on the above questions, and developed an original concept creation program for innovative new product development based on TechOptimizer™.