The 9th TRIZ Symposium in Japan 2013
(Extended) Abstract of Presentation
EI01eAE-Cascini(Italy)-130513

Risk Reduction and Opportunity Exploitation through TRIZ-based Technology Forecast

Gaetano Cascini

Politecnico di Milano, Italy

Abstract

The capability of anticipating the main features of future products and related manufacturing processes is more and more a critical asset in industry, due to the innovation-based competition of markets and to the extremely reduced lead time of modern product development cycles.

The rate of innovation has reached a speed so high that despite the diffused efforts to shorten the lead time, companies continuously struggle for renovating their products on a day-by-day perspective. This implies the necessity to make critical decisions with very limited time resources to minimize, monitor, and control the probability and/or impact of unfortunate events.

In this context, a relevant research goal in the engineering design domain is the definition of reliable practices and supporting tools for anticipating the main features of future products and related manufacturing processes.

The present speech overviews the potential role of TRIZ, the Theory of Inventive Problem Solving, as a reference theoretical framework to anticipate future technological scenarios. With respect to other well-known applications of TRIZ models to the prediction of system evolution, this presentation proposes the TRIZ potential for qualitative anticipation of a system's future combined with Trend Extrapolation models, such as the Logistic Growth Curve model and the Logistic Substitution model, to determine the timing of evolution and to integrate quantitative estimations.

Some example of industrial applications from different fields will clarify the proposed integrated method.
The research activity is partially funded by the European Marie Curie Programme: "FORMAT: FOrecast and Roadmapping for MAnufacturing Technologies" Project FP7-PEOPLE-2011-IAPP/286305.

The 9th TRIZ Symposium in Japan 2013
(Extended) Abstract of Presentation
EI02eAE-Shin(Korea)-130727

What makes Korea so enthusiastic about TRIZ?

Jeongho Shin, Ph.D. (Secretary General, Korea Academic TRIZ Association)

The world paradigm shifts from information to creativity society, and creativity-based management is getting more important to improve corporate competitiveness. In that sense, TRIZ is undoubtedly one of the most popular methodologies for systematic problem solving and creativity education. Especially in Korea, TRIZ is widely used to improve products, services and systems, and to train creative thinking skills. At the beginning of adopting TRIZ in Korea, we focused on solving technical problems and training creative people. Recently, we are moving to the next stage of business TRIZ research, educational supports for students, and supporting small and medium-sized companies.

Samsung electronics uses TRIZ to create the core technology and innovate products. POSCO operates an internal TRIZ College to train creative elites. Hyundai uses TRIZ with DFSS to solve technical problems. SK Hynix is focused on strategic R&D patent creation using TRIZ. Like this, many Korean major companies use TRIZ as a tool for developing the innovative products and making excellent patents in their business areas. Also, many universities are teaching TRIZ in the regular courses such as Creative engineering design. TRIZ is mainly taught in the departments of Mechanical Engineering, Industrial Engineering and Business Administration. The government and research institutions support wide utilization of TRIZ in many ways. In 2010, KATA (Korea Academic TRIZ Association) was founded for the purpose of exchanging knowledge between academic and industrial circles and vitalizing TRIZ. KATA is expanding its activities such as hosting Global TRIZ Conference and KOREA TRIZ Festival annually.

This presentation introduces a brief history of TRIZ adoption in Korea, the current status of use in Korean companies and universities, and the critical factors that makes Korea so enthusiastic about TRIZ.

Systematic Approach to Arowana Gender Identification Problem using Algorithm of Inventive Problem Solving (ARIZ)

TriZit Benjaboonyazit (Thai-Nichi Institute of Technology, Thailand)

Abstract

Arowana is a beautiful and expensive fish. Many farms try to improve their efficiency in breeding arowana, but the problem is that arowana is monomorphic, which makes it difficult to distinguish male from female just from their appearance. This causes difficulties in mating and selling of arowana. Many trial-and-error methods have been used with little success.

The author came across this problem when he visited a golden arowana farm in the southern part of Thailand and tried to look at this problem from the viewpoint of a TRIZ practitioner. Similar monomorphic problems in other fields have been searched for to find out whether there were any inventive principles that could be applied, and luckily one was found in the problem of distinguishing two identical black boxes, each containing one of the two different electrical circuits. Electrical engineers like the author are likely to be trapped within their psychological inertia by using their expertise in circuit analysis without success since the two different electrical circuits in the black boxes are equivalent ones of the same circuit. With TRIZ's concept of resources, this problem was easily solved.

Since TRIZ's concept of resources is one of the important parts in the Algorithm of Inventive Problem Solving (ARIZ), the author has challenged to use ARIZ to systematically analyze the problem and search for possibilities to identify the gender of arowana, and finally, among 32 ideas generated, some high potential solutions such as using plasma vitellogenin from the blood of arowana have been proposed.

Extended Description

Arowana is an ancient fish living in freshwater. It is a carnivorous fish, eating other small fish and insects. Its mouth can open wide to swallow small fish and it can jump to catch insects above the water surface. It is popular as an aquarium ornamental fish. The elongate body is covered by large, heavy scales, with a mosaic pattern of canals. The dorsal and anal fins have soft rays and are long based, while the pectoral and ventral fins are small.

Arowanas reach their maturity around the 4th year. A female arowana has a single ovary which contains around 20~30 large ova. A mature male arowana possesses a single thread-like testis.

Attempts have been made to identify the gender of arowana by exposing their sexual organs, but this may endanger their lives.

Male arowanas use their mouth to incubate the fertilized eggs until they become fry. So it is believed that male arowanas have bigger mouth than female arowanas, and the size or volume of empty space in their mouth can be used to distinguish male from female arowanas. This method is widely used, but still it lacks accuracy and is considered unreliable.

ARIZ-85C is used to analyze the problem and search for possibilities to identify the gender of arowana and comes out with satisfactory results.

Redesign by Reducing the Number of Parts through TRIZ II

~Break Away from Existing Designs and Stay One Step Ahead of Competition~

Yoshiharu Isaka (IDEA Inc.)

Abstract

If there is little difference between products, such as functions, there may be a risk that the product becomes just an ordinary commodity with little competitiveness. Conversely, if the product is superior in function and cost, there is the chance to be a success. That is, in other words, technical power that can be achieved only by high level, highly qualified design.

It has long been said that excellent designs are simple. The less the components of the product are, the more costs can be reduced and reliability will be improved. Unfortunately, that kind of high level design is said to be dependent only on individual skills and therefore it is hard to be taught.

However, TRIZ can break through the difficulty and fulfill this in organizational levels.
Also, “trimming” is an effective method for reducing the number of component parts of the product, and it can be used without concern about contradictions.

For the above reasons, this year again, we will explain (*we have decided to explain) about simplifying the product design by the method of “trimming”. In addition, it is also possible to link the design to a new development by reducing the component parts, without violating competitors' patents; so we will mention this, too.
As an example of the method, we take up an ordinary system that has not developed much, such as last year’s one, and show that such an ordinary system can have competitiveness.

The 9th TRIZ Symposium in Japan 2013
(Extended) Abstract of Presentation
J02eAE-Nagai()-130506

Let's talk about TRIZ

Q&A when you try to introduce TRIZ into your organization

NAGAI Tetsuya (Japan)

Abstract

If you intend to introduce TRIZ into your organization, you may be confused. You would hear "TRIZ is splendid" or "You must introduce TRIZ" from TRIZ experts, but others say "TRIZ? It never helps."

In this presentation, let me try to answer the simple questions and the rumors that TRIZ beginners may face when they introduce TRIZ. The answers are only my personal opinions, but I'd like to talk about these issues with you.

Description

When you feel TRIZ is good and want to introduce it into your organization, you may notice there are many walls to overcome. And you may conceive some questions and hear some negative rumors. How to think of them is described here in Q&A format.

One of the questions about TRIZ may be its effectiveness. For example, "Can you solve the problem inevitably?", "Can you take out a patent?", or "The problem could be solved without TRIZ, couldn't it?"

You can answer these questions by regarding TRIZ as a tool your brain uses. That is, you can't solve the problem inevitably, you can't take out patent all the time, yes, you could solve the problem without TRIZ. But the probability you can solve the problem will soar, and you will get excellent solutions that lead to some patents if you use the tool.

When TRIZ was introduced to Japan for the first time, it may have been explained that TRIZ was almighty. But it is obviously incorrect. Nevertheless TRIZ is worth introducing.

Your manager may ask you "How much money can we earn if we introduce TRIZ?" This question is very difficult to answer because it is the manager's job to find out how much you can earn. The manager has the information to ascertain the answer of the question. And the manager should decide how you use TRIZ.

For your information, "2.3 billion yen per year" is announced (*) as a case of Samsung.

* TRIZ special public discourse 2006.8.28

The most difficult question to answer would be "If TRIZ is such a good thing, why doesn't it spread?" It is because there are various resistances. But I don't know how to beat them. I'd appreciate your opinions. Let's talk about TRIZ.

QFD and TRIZ Case Study in Surface Treatment Chemical Development

Kazutaka Tajima (Meltex Inc.)

Abstract

Meltex conducts business from R&D to manufacturing and sales related to the surface treatment chemical, the so-called plating solution chemical. Formerly, it was used for decoration, and recently, it is widely used mainly in the electronics area. The surface treatment chemical, being regarded as an industrial material, is supplying a material which becomes end products after passing multiple processing as a downstream in the supply chain. A case study will be introduced where a new concept is created using the surface treatment chemical through QFD and TRIZ in order to propose a new manufacturing method to the customer looking on the future market trend from the downstream chemical industry. Findings and problems obtained through the idea creation process using QFD and TRIZ at a development conducted by a material manufacturing SME in the downstream like the chemical industry will also be described.

The 9th TRIZ Symposium in Japan 2013
(Extended) Abstract of Presentation
J04eA-Kurosawa()-130512

Three stages of classical TRIZ

KUROSAWA, Shinsuke

Abstract

It is not an easy task to understand what TRIZ is. It is somewhat difficult not because of TRIZ but because we tend to forget that TRIZ is an accumulation of the results of many people's continuous efforts for more than 50 years for the purpose of making a system of rational methods for thinking and further improving it.

Notwithstanding that it is easy or not, we cannot make the best of TRIZ without understanding it. It seems to be wise to start understanding TRIZ from its classical part because it was compiled under the leadership of a single person, Genrikh Altshuller, and thus we could expect a consistent logic in the variety of the contents. As the first step of learning the classical TRIZ for its understanding, the author chose ARIZ-56 (retrospective name), ARIZ-71 and ARIZ-85C because they were made about the same intervals in between and represent major stages of TRIZ development.

The paper tries to compare the 3 ARIZ-es focusing on the following: 1. Structure of the ARIZ, 2. Status of ARIZ in the system of TRIZ, 3. Concept of "Contradiction", 4. Tools for identification and resolution of contradictions, 5. Positioning of "The laws of technological systems evolution", 6. Positioning of "Ideality", "Systems approach", "Physical effects" and "Resources". However, the real purpose of the paper is to depict the dynamism of TRIZ development in the background of the ARIZ-es.

Invention Value Evaluation According to Patent and Market Information Part 3

"Electric Toothbrush" as a Case Example –

Kimihiko HASEGAWA, Toshimitu KATAOKA, Shigeru SUZUKI,
Nozomu TAKEUCHI, Narumi NAGASE, Toshiaki MASAKI, Hirotsugu ISHIHARA

(The Intellectual Property Creation Research Subcommittee, Japan TRIZ Society)

Abstract

Inventions enhancing market size or raising market share are recognized to have high technological value, (entitled as useful technology), contributing to the profit in business to satisfy customer needs. On this viewpoint, analysis is continuing to specify the value of invention by comparing its patent information with the market information of the corresponding product. Previously, we had reported on the value evaluation result of inventions related to cost-effectiveness comparing the estimated cost of inventive activities from patent application number and number of inventors with the market effect estimated from the market size and market share transition of the top 5 manufacturers in the electric toothbrush sales. This time, the feature of transitioning problems for invention in each of the above-mentioned companies will be clarified, and the outcome of an attempt to propose a next-generation product concept of the electric toothbrush based both on a newly conducted customer questionnaire survey and future forecast depending on the Law of Evolution in TRIZ will be reported.

Scheme of 'New Product and Service' System Creation Using TRIZ

- Search for a Creating Method of "New Product and Service" System by Analyzing "Hot Sellers and Services" Using TRIZ -

(Business and Management TRIZ Research Subcommittee, Japan TRIZ Society)

Ikuo YOSHIZAWA (The SANNO Institute of Management),

Hisataka IZAWA (Sony Corporation), Fumiko KIKUCHI (Pioneet Corporation), Yasuo MORIYA (FUJITSU ADVANCED TECHNOLOGIES, LTD.),

Osamu IKEDA (NIKON IMAGING SYSTEM INC.)

Abstract

Most of reported TRIZ applications are for solving technological problems. One of the challenges for TRIZ to be deployed in much wider scale is to prove its capability to help solve business and management problems.
We plan to study methods how to apply TRIZ to tackle business and management problems through analysis of real cases. We intend to make up the guidance for TRIZ application for this purpose. The present report is about our effort and some of its results up to the present time.
As the second round, we applied TRIZ thought and technique to analyze “hot sellers and services” and tried to investigate the creation method of a new product and service. We aimed at the following phases for the examination this time:
1. Identify a business that continues to grow by providing hot sellers and services.
2. Analyze the characteristics of hot sellers and services.
3. Based on the analysis result, examine whether the application of contradiction solution and evolution trend is effective for the creation of “New Product and Service” system.
4. If it is effective, devise a creation process for “New Product and Service” through application of contradiction solution and evolution trend.
Study phases 1 - 3 were presented in fiscal year 2012. This time, the study results of phase 1 – 4 will be reported with the study phase 4 as the core.

The 9th TRIZ Symposium in Japan 2013
(Extended) Abstract of Presentation
J07eA-Ogata(Olympus)-130513

7 Solutions to extend the application of TRIZ - Including the prevention of design risk -

Takashi Ogata, Kazuhiro Fujikawa (OLYMPUS Corporation)

Abstract

OLYMPUS has introduced and promoted QFD, TRIZ, and Taguchi Method as a scientific method for improving the development process since 2009. Recently, we are promoting 7 Solutions to extend the application of TRIZ to meet the needs and targets of engineers.

The 7 Solutions are as follows.

(1)Fuzzy Frontend Analysis (2) Setting Theme (3) Fast Cause Analysis (4) Making Strong Patent (5) Cost Reduction (6) Effective Evaluation and Experiment (7) Risk Prevention

These 7 Solutions are based on the following 3 key items for raising the efficiency of engineers.

1. Limiting the system area (handling area) from the point of view of time and space.
2. Using the functional approach for coordination of methods by thinking customer needs.
3. Selection of two idea approaches by TRIZ (Type of eradicating the problem or Type of fulfilling the desire) according to each purpose.

Efficient education system of scientific methods including TRIZ for improving the development process
- Trial of education in close contact with the engineer's needs -

Kazuhiro Fujikawa, Takashi Ogata (OLYMPUS Corporation)

Abstract

OLYMPUS has introduced and promoted QFD, TRIZ, and Taguchi Method as a scientific method for improving the development process since 2009. Engineers are always busy with development, so they cannot use lots of time for education. On the other hand, senior engineers want to know how to apply methods to a problem instead of basic knowledge. We have modified the education system for various engineers. And we found that it was easy to get the sympathy of engineers by providing educational opportunities like having as many "Drawers in the head for a solution" as possible

Educational courses are as follows:
(1)90 Minutes Basic course
(2)2 Days course of lectures and exercises
(3)90 Minutes of 7 Solution courses.
Each course has fresh contents including know-how obtained from field application

Results of installing these educational courses:
1. Trainees of these educations have increased.
   (About 2.5 times compared with conventional. About 400 engineers per year.)
2. Scientific methods were applied to many themes in proportion to the increase in trainees.
3. Training of 90 minutes brought the benefits of a short period. It has become possible to greatly increase the opportunity to learn scientific methods simplifying trainings in remote areas.

Case Study Concerning Technological Contradiction
(TRIZ Spreading/Use Study Group of Japan VE Association Kansai Branch)

Hisayoshi Tanaka (Shimadzu Corporation)

Makoto Unno(), Kazuyasu Ikeda(Sekisui Engineering Co., Ltd.)

Abstract

Attention to the TRIZ technique was paid by the part of the VE technical research as a means of a new additional value creation, and "TRIZ Spread and Use Society" was established in Japanese VE Society West Japan Branch Kansai District in 2003. Various, individual tools have been widely examined aiming at uniting with the TRIZ technique and VE use and to spread. This society has worked on the case study as a six year plan from fiscal year 2006 to fiscal year 2011 especially expecting the materialization of the law applicable to the new product plan and the development phase on the manufacturer side and the efficient utilizations. In addition, the activity in fiscal year 2012 for the maintenance of practicing guidance used easily started. In addition, the case study concerning "Technological Contradiction" was conducted based on the current research results. In this presentation, the content of executing this case study and the practical, useful finding obtained as a result will be reported..

The 9th TRIZ Symposium in Japan 2013
(Extended) Abstract of Presentation
J10eA-Hisanga(Denso)-130515

In-house Promotion of TRIZ Use through Practice

Shigeru Hisanaga, Hiroshi Takenaka (DENSO CORPORATION)

Abstract

Our company has introduced TRIZ in 2003, and TRIZ use is promoted in-house up to the present. It has shifted to the activity that had centered on practice since about 2006 through the introduction stage in which it had centered on the workshop by the cooperation of the initial external consultant. This is an activity that applies TRIZ to the problem of an actual business with an in-house propeller by an in-house applicant and aims at the solution. This activity has continued up to the present. The number of tools that were able to be mastered was increased to answer various expectations for various themes with TRIZ from around 2009, and applications of TRIZ in combination with other techniques were tried.

It will be reported on what problem existed for about ten years from the introduction to present in the activities of about 200 themes, the improvements tried and what we are doing now.

The 9th TRIZ Symposium in Japan 2013
(Extended) Abstract of Presentation
J11eA-Nakagawa(Osaka Gakuin Univ.)-130515

General Methodology for Creative Problem Solving and Task Achieving -- Its Plan --

Toru Nakagawa (Osaka Gakuin University, Professor Emeritus)

Abstract

TRIZ has been established as a methodology of 'Invention', and extended to be a methodology of 'Technical Innovation' and further to be a methodology for 'Innovation' including non-technical applications. However, we should better extend it in a more general sense as a methodology for creative problem solving and task achieving. In the present paper I will describe a plan for establishing such a general methodology.

By unifying TRIZ/USIT and various other methods, we should establish a methodology simple and easy to understand and apply. For this purpose we will adopt the Six-Box Scheme as the new paradigm for creative problem solving. We build a methodology for technical fields and another for non-technical fields, in a parallel manner. Using the data flow as the basic representation scheme, we should specify the information necessary for input, intermediate, and output of each stage; the information need to be described in terms of clearly-defined concepts and in some standardized representation methods. The ways of obtaining and deriving such information at each stage may allow alternatives. Besides these logical aspects we should also take consideration of psychological aspects of the problem solver and of the stakeholders.

Under these strategies, we should make a cooperative work of describing various methods including TRIZ/USIT. Such a cooperative work will help to form a common understanding and further to establish a unified general methodology for creative problem solving and task achieving. It will also form the basis of proliferating the general methodology.

Possibility of Application of TRIZ Technique to IT Technical Field
- Business Model Patent as Theme -

Ken Ota (Asahi Patent Firm)

Abstract

TRIZ is a technique developed to solve a technical problem originally. However, the possibility of TRIZ is not purely limited to a technical field, and the possibility is tried in the management field. On the other hand, it is also used to analyze and evaluate the patented invention by using the technique of TRIZ.

With the development of IT technology in recent years, patents concerning inventions related to computers and so-called business models have increased in IT technology as patent protection targets. However, a case where the technique of TRIZ is comparatively applied compared with the patent in a new technical field is few. To search for the possible application of TRIZ to such a field, the research of the case has to be deepened.

Therefore, in the present study, one existing patent in such a field was chosen, TRIZ methods were applied and discussed in the group, and it was verified what ideas would come out.

Concretely, it was an IT related technology, a patent with an especially strong business factor, a lead of the business model patent, known as "Mapion Patent" related to technology providing of advertising information that was used as a theme. And, creation of an idea that would evade this patent was tried by using the TRIZ methods of Ideation Inc. Additionally, ideas that would improve and enhance this patent, which came out secondarily, will be introduced.

Case Study of Control of IP (CIP) that Uses I-TRIZ and Idea Generation -

Gen Abiko (MINORU International Patent Office)

Abstract

The application to CIP (Control of IP) in addition to IPS (Inventive Problem Solving) is expected in I(Ideation)-TRIZ that evolved a further solution principle and a theory based on the basic element cultivated with classical TRIZ. CIP is a systematic process to increase the value of the patent, and to strengthen against the violation of the patent and to protect from detour. IWB (Innovation Workbench) offered by I-TRIZ is useful in systematically advancing the above.

In the present study, with the cooperation of the constituent member of the CIP study meeting sponsored by Ideation Japan, CIP was actually undergone, and a series of process from the evasion of the patent to strengthening and evaluating were conducted by actually using IWB to a patent of a small animal capture tool (rat trap). In this presentation, the content of this case study will be introduced together with the law and finding, etc. for conducting CIP more efficiently using IWB.

The Essence of the Inverted Risk Countermeasure Method “AFD" in I-TRIZ
How about Becoming a Saboteur?

Teruyuki Kamimura (IDEATION JAPAN INC.)

Abstract

"A saboteur is an expert at risk countermeasure!" It’s not a joke. I’m being deadly serious!!
Until now, people have been thinking only about “protecting” a system. “How can accidents, breakdowns and failures be avoided?” And, there was always a long way to go to reach the solution.
Isn’t it about time to reverse our approach now? That is, thinking of “destroying” a system, “How can accidents, breakdowns and failures be caused?” Strangely enough, "failure-generating mechanisms," which could not be seen until now, come into view. Yes, the solution is already dead ahead.
This is the essence of the risk countermeasure method “AFD” (Anticipator Failure Determination), which used to be called “Subversion Analysis”, in I-TRIZ. It will be illustrated in three steps along an actual case.

S Curve Analysis and Evaluation Concerning Technological Development Trend and New Commodity Announcement History of Electric Toothbrush

Hirotsugu Ishihara, Narumi Nagase (Sony Corporation)

Abstract

Up to now, in the activities of the Intellectual Property Creation Research Subcommittee, it had analyzed concerning the transition of the patent application time and the problem of the invention for the electric toothbrush, and an approach that ties this to the evaluation of the value of the invention has been done. A poster presentation introduces this approach in this symposium.

In this presentation, concrete contents and findings related to this series of approach will be reported centering especially on the correlative analysis between the transition of the problem readable from patent application information and Technological evolution pattern and history of the new product sale from the activity of the Intellectual Property Creation Research Subcommittee.

We think that this case can be effectively used in the scene of business practices towards the leading enterprise of intellectual property.

"TRIZ as a Practical Problem-Solving Methodology" - As a Core Methodology for Engineering Solutions -

Hajime Kasai (IDEA Inc.)

Abstract

Since its establishment in 2003, with our motto of "TRIZ as a practical problem-solving methodology", IDEA has helped the Japanese manufacturing sector develop high-functionality and high-quality products in a timely and cost-effective manner. During the last ten years, the author has been engaged in many real-world product development and problem-solving projects of the company's clients as a TRIZ methodology consultant.

In the book published in 2006, the author proposed a series of TRIZ-based problem-solving processes to illustrate how engineers can apply TRIZ to solve various types of day-to-day problems. In addition, in this presentation, the author has classified 119 project themes that the author was engaged in for the last 10 years as a consultant into 6 project theme categories. The project details including their themes, processes and results are not sharable due to the non-disclosure nature; however, the author's intention in this presentation will discuss how TRIZ can be applied in each project-type category and also how TRIZ can be more effectively applied in specific types of projects, together with other systematic methodologies such as QFD and Taguchi Method.

The author hopes this report shall provide some useful guideline bases to TRIZ practitioners and researchers as to effective TRIZ applications.

Extended Description

The following figure shows the distribution of the 6 project type categories for the author's classifications.

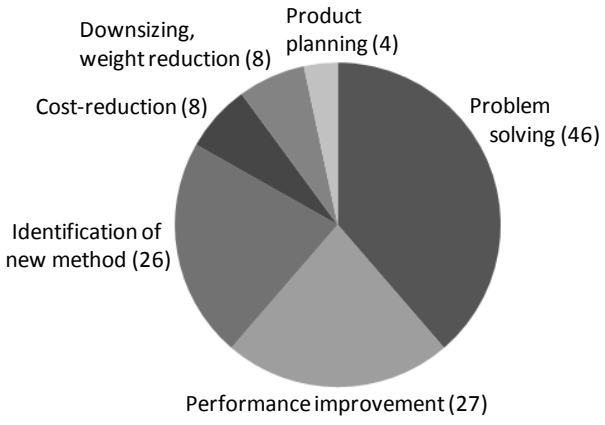

Fig. The number of the enforcement theme

The 9th TRIZ Symposium in Japan 2013
(Extended) Abstract of Presentation
J17eA-Kataoka(Patbrain)-130516

Technology Trends and Analysis of TRIZ Problem Solving

Toshimitsu Kataoka (Patbrain Co, Ltd.)

Abstract

Altshuller describes in the book "Introduction to the Invention Conception" (AGNE Publishing), "If the objective criterion of removal of technical contradiction is used, the invention is remarkably good at the objectivization of the patent application clerical work". I think that he left this word in the book strongly feeling the necessity for evaluating inventions objectively taking part in the patent clerical work in the former Soviet Union. Considering the verification whether this removal of technical contradiction might be an objective criterion was one of the starting points of TRIZ, the further result of the survey of the contradiction problem solving technology trend based on the investigation report (The 6th TRIZ Symposium in Japan), which was undertaken thinking that the re-analysis of huge patent information from the viewpoint "Removal of technical contradiction" had it meaning, will be reported.

Design Process Management based on Redesigned Contradiction Matrix in Aesthetic field

Yui Kato, Manabu Sawaguchi (Waseda University)

Abstract

In General, Designers and Creative Directors working at a company extremely focus on expressing the aesthetic sense in their mind and aren't concerned with the methodology for creating design in aesthetic field. Therefore, design skills and idea generation abilities in aesthetic field haven't been shared in a company. However, supplying sophisticated design-centric products to the market continuously is one of company's missions. In order to realize it, not only enhancing the advantages of their design skills but also managing design process is an essential condition.

Under the circumstances, the individual differences and obscure reasoning can be seen in decision-making and design evaluation process.

In order to prevent that, it is necessary to clarify the designers' intent and design evaluation criteria based on the product concept. Then, we pay attention to AHP which can structure and visualize decision-making process and design evaluation criteria.

The design issues are identified quantitatively by the evaluation in the previous stage, so, the point in the next stage is how to figure out the solution and come up with the final design.

Here, I pay attention to Contradiction Matrix (CM) 2003 developed by Darrell Mann in TRIZ, and we try to redesign CM to be suitable for the process of creating design and sharing design skills in aesthetic field.

To be concrete, we want to organize the design parameters to be suitable in aesthetic field based on the 48 design parameters of CM2003. But, it is still under verification. Therefore, we would like to conduct an analysis of elements for creating design, and show a demonstration experiment using the redesigned CM for designers and creative directors.This study, therefore, is to introduce quantifying and visualizing design work using AHP and TRIZ in order to standardize the design work which has partially been a "black box".

Proposal for an Efficient Invention Deployment Method Based on TRIZ

Tatsuya Saito (Inspire Patent and Trademark Attorneys)

Manabu Sawaguchi (Waseda University)

Abstract

The enterprise is done and when applying for the patent, the inventor's invention is done to the work to develop the invention. The purpose is to derive a high-ranking invention, the horizontal invention, and the subordinate position invention based on the invention of the inventor, to enhance a technical range of the invention, and to improve the patent of the invention.

The point etc. where efficiency in work is low are pointed out though this invention development work is done by the brainstorm in which the inventor, the intellectual property member, and the patent lawyer, etc. participate.

Because such a problem is solved, it is possible to use TRIZ. The invention development work is the one done with the invention that the inventor created has already existed. TRIZ is a theory to create a new invention on the assumption that a technical problem is unsettled while it requires a technical problem to have solved so to speak.

Therefore, TRIZ cannot be applied directly to the invention development work.

To improve the patent of the invention, the invention derived by the invention development work is pointed out. Moreover, the problem that the fulfillment of the condition for patentability is not considered in TRIZ is pointed out though it is necessary to fulfill the condition for patentability necessary for the patent acquisition.

Then, it proposes the technique to develop the invention efficiently by introducing TRIZ into the invention development work in the best form in the present study. Especially, it proposes the technique to derive the horizontal invention as an early stage of the research this time.

Approach to TRIZ Introduction at JNC Corporation

Naoyuki Yoshida (JNC Corporation)

Abstract

JNC Corporation is a diversified chemicals company, and is currently promoting business with liquid crystal material as its core product. Market globalization, R&D speed acceleration and increasingly fierce competition necessitates us to concentrate our limited human resources, introduce a new tool earlier than competitors and use it effectively in order to win out with the sales-size and workforce of our company. As the "new tool," we focused attention on "TRIZ".

Without precedent in the diversified chemicals enterprise, we have been working on TRIZ and expanding in-house activities since fiscal year 2010. In this presentation, JNC's three-year approach (activity) to TRIZ and a part of its result will be described.

Constructing of Young Man Engineer Promotion Seminar that Applies the Idea of Separation in Time

Hideaki Kosha (USIT Monozukuri Technical Support)

Abstract

It seems, the worry about the goodness for the young man engineer who has just joined a company is "It is not understood how where to put up the hand to the achievement of the technological opportunity given by me". To grapple with the problem oneself, and to unite the design of experiment while what's should be done from the senior and the superior being given, the experience of corresponding is needed.

There is an approach "Principle of existence -> separation of technological problem -> contradiction" in one of the solution policies of TRIZ. Especially, "Time" is an abstract concept. A lot of authors experienced advancement by the parties concerned' understanding by intentionally doing "Divided by the viewpoint of time", and facing to the solution.

Authors found the aspect that separated time being obtained by applying the idea of "Characteristic method of the space time" of USIT, and drawing the presumption graph in which it had paid attention to a certain characteristic. In addition, even the young man engineer was found to be a promotion of the imagination of the phenomenon to stay up in the separating time of a technical discussion, and to be came good at the problem match for oneself. The young man engineer promotion seminar was executed based on these experiences, and the effect was confirmed.

The 9th TRIZ Symposium in Japan 2013
(Extended) Abstract of Presentation
J23eA-Otsu(Suzuka National College of Technology)-130716

Intellectual Property Educational Activity at Suzuka National College of Technology

Takayoshi Otsu (Suzuka National College of Technology)

Abstract

National Colleges of Technology is advancing a further reform aiming at the upgrade of the Technical College education on the 50th anniversary of foundation this year. It aims ″Technical College of Technology for the society″. Furthermore, it is assumed that the keywords toward the next 50 years are (1) talents who can play an active part globally while making much of an area, (2) talents who can develop a sustained technology with a wide view such as the environment and resources, and (3) innovation talents who can develop ideas for them.

In this paper, an intellectual property educational activity on the ″Creation, Protection and Exploitation″ that aims at the improvement of the problem finding and solving abilities of the students at Suzuka National College of Technology will be introduced. The characterized activity of our school is the cooperation with the local region and the activity that all the members participate in.

1. Action to a continuous intellectual property educational activities
2. Administration of the patent contest by the committee and improvement of the skill of the teacher
3. A special class for the intellectual property educational activity
4. Writing of the descriptions for the lower grades
5. Intellectual property education support by experts in the local region
6. Recognizing local problems and creating ideas for their solutions

To develop the engineering design education at Suzuka National College of Technology, I have introduced TRIZ as a new idea creation method.