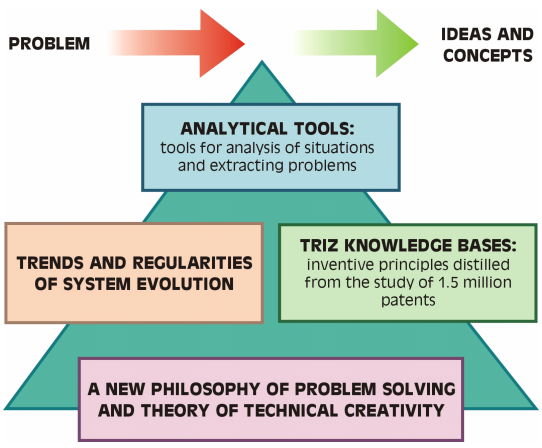
TRIZ and Structured Innovation: New Tools for Business Creativity.

Soon after appearing in the West in 1992, TRIZ has quickly gained reputation as one of the leading methods to support innovation worldwide. Since 1996, Procter & Gamble trained 6.000 professionals in TRIZ, while LG Electronics in South Korea has a training plan for 2.000 professionals. Due to immense costs savings achieved with TRIZ in 2002 (more than 100 mln Euro up to date), Samsung Corporation recognized TRIZ a best practice of innovation.

TRIZ, an abbreviation which stands for the *Theory of Inventive Problem Solving*, was originated by the Russian engineer Genrich Altshuller in 1946. Modern TRIZ is a collection of knowledge-based techniques for solving inventive and innovative problems in a systematic way. TRIZ resulted from the long-term studies of more than 1.500.000 solutions stored in patent collections and technical literature. Such massive efforts made it possible to reveal regularities of inventive thinking and develop a systematic methodology of technical creativity. In addition, TRIZ research identified trends and patterns of system evolution. With TRIZ, it became possible to produce a forecast of future system development based on a solid scientific background.



Originally, TRIZ was intended to be used in solving problems and creating new intellectual property in technological areas. However, modern TRIZ is more than an engineering method. TRIZ studies made it possible to capture the essence of problem solving creativity. We all need creativity to invent new concepts, generate new ideas or solve the most difficult problems which can not be solved within a scope of existing knowledge and known solutions.

On the other hand, there are plenty of psychological methods of boosting creativity known and used. Among the most successful are brainstorm and lateral thinking. So why use TRIZ? In contrast to those methods, which target breaking the mental barriers only, TRIZ adds one more but very powerful dimension: knowledge. TRIZ revealed that the same general principles of creativity and advanced problem solving are valid in any area of human activities: technology, business, management, marketing, arts, and so on. By studying massive information collections, TRIZ researchers revealed basic principles of innovative thinking and patterns which lead to strong ideas and solutions. These patterns and principles were systematized and structured according to problem demands. By re-using this knowledge, which is a generalized experience of many generations of best thinkers, we can tremendously boost our own problem solving skills.

The most difficult problems arise when we face a conflict between two demands that have to be fulfilled. For instance, a warehouse must be large to accommodate everything we want to store, and at the same time occupy as less as possible space because we do not want to pay much rental costs. Inability to meet the conflicting demands by available methods is a strongest barrier to obtain a feasible idea of a solution. On the other hand, any conflict is a driving force behind evolution of any technology or business, because once we solved a problem involving a conflict, we have created a new breakthrough solution in our area. TRIZ was developed to help generate ideas by resolving conflicts. TRIZ postulates, that in 98% of all problems involving conflicts a solution principle is already known, the only problem is that we do not know it. TRIZ as well as the other methods of Structured Innovation (a methodology which combines TRIZ and other advanced analytical techniques for problem identification and analysis) are targeted at analytical study of a problem or an

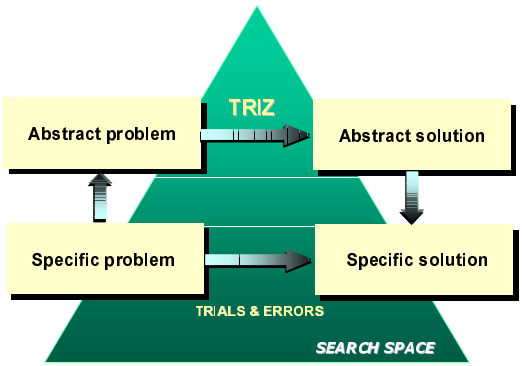
existing situation and systematic guidance through a number of the most advanced solution patterns to produce the best ideas possible and unhide latent solutions.

Let us see an example of how TRIZ works. A library in UK was about to move to another location. An estimation was that about 5% of all books would be destroyed. On top of that, to move large volumes of books appeared to be too costly. So what to do? To move books accurately, we need to pay a lot of money. And on the other hand, if we pay less, then we lose quite a quantity of the books. A conflict. There are two ways to solve conflicts: optimization and conflict elimination. By optimization, we agree to find an optimal costs for destroying the lowest amount of books. By elimination, we pay nothing at all and all the books are moved safely and securely.

One of the TRIZ principles is to use resources of the surrounding environment to resolve conflicts by transferring a needed function from a system to a so-called "supersystem." A supersystem consists of everything that interacts with a system (library) but is not a part of the system. What is a supersystem of library? Book suppliers, transportation, building, library officers, readers… So let us try to see if the function "to move books" can be delivered by something in the supersystem. Transportation? Yes, but costly. Readers? Why not. The library asked every reader to take 5-10 books from old location and return them to a new building. The idea worked perfectly. All books were saved and the relocation costs were as minimal as possible.

Another example. Since 1994, a new Russian regulation has forbidden shops and supermarkets to sell consumer goods for any other currency different from a Russian ruble. However, due to the high rate of inflation of local currency, people used to keep their savings in other, more stable currencies. After introducing the regulation, they had to visit a currency exchange office before going to a supermarket, and this decreased sales in supermarkets. Therefore, the following conflict takes place: A supermarket has to accept foreign currency in order not to let sales decrease and may not accept the currency due to the regulation. Another TRIZ principle states that we can solve the conflict in time by separating the conflicting properties in time. When a customer pays, he pays in the US dollars. But the supermarket receives Russian rubles. Regarding time, this is a disperse process. Therefore, a new element has to be introduced in the supermarket to allow for transformation of the hard currency to the ruble without breaking the law. A proposed solution was the following: the currency exchange office should be located within the supermarket. The situation was resolved by combining the currency exchange function and cashier function. This solution does not contradict with the laws and makes the procedure of payment "transparent" to a customer.

In summary, TRIZ helps to analyze a situation, model a problem, find a principle or a pattern from TRIZ knowledge base which helps to solve the problem, and then generate a number of new ideas based on the principle or the pattern. Thus we can avoid numerous trials and errors which are the strongest factor contributing to the waste of time and making wrong decisions.



Working with TRIZ is not easy due to a large body of knowledge and a paradigm shift, but extremely beneficial. It helps to save time and money for finding new breakthrough concepts and solutions. TRIZ drastically accelerates the process of innovation and dramatically increases the coefficient of personal creativity and enhances problem solving skills of everyone.

By Valeri Souchkov, 2002