

Systematic Innovation and TRIZ

What is innovative about innovation today is the realization that innovation can be achieved through systematic methodologies based on patterns of evolution and inventive problem solving. **Systematic Innovation Methods (SIM)** provides a methodology through which innovation projects (new product, process and service development) and inventive problem solutions (overcoming contradictions in technical and physical problems) have more predictable and repeatable successful outcomes.

TRIZ is the Russian acronym for the **Theory of Inventive Problem Solving** and represents the most practical and predictable approach to systematic innovation. TRIZ, as a systematic innovation process, can now be taught as a discipline using various computer-based Systematic Innovation Methodologies (SIM). The use of these SIM tools greatly enhances the problem solving and new product development prowess of its practitioners. Dr Altschuler was the founder of TRIZ. He derived an analytical approach to inventive problem solving with its axiom:

“The evolution of all technical systems is governed by objective laws.”

These laws reveal that during the evolution of a technical system, improvement of any part of the system will lead to conflict with other parts of the system. Inventive problem solving aims to improve the functional performance of every part of the system through evolution of the less developed parts or components. It is in solving these conflicts and improving the functional performance of the total system that inventions of new products and processes are derived. Successful patents also demonstrated a preference for overcoming seemingly insurmountable technical and physical contradictions rather than developing solutions to circumvent these contradictions. The objective of TRIZ is to identify that unique solution that will increase the benefits of the technical system without increasing the harmful effects, such as costs, effectiveness and interface. Out of the analysis of these conflict resolutions, Dr Altschuler derived 40 **Inventive Principles**. In a study of current patents, products and even systems such as management systems, the innovator can readily identify the inventive principle associated with its current form, function and attributes.

The presentation covers the evolution principles and its application in solving some technical challenges.