

Structured Innovation

Exploring TRIZ - A Systematic Approach to Innovation

a detailed discussion of an innovation method

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Audience-oriented:

non-scientific management audience,
such as entrepreneurs, intrapreneurs, or innovation managers

1. Origin and Definition of TRIZ

TRIZ (Theory of the Resolution of Inventive Problems) is a methodology of innovation proposed by Soviet inventor Genrich Altshuller in the 1950s. Based on the analysis of tens of thousands of patents, TRIZ reveals universal patterns and principles of the innovation process designed to help inventors solve technical and scientific problems systematically (Ilevbare et al., 2013).

2. Core principles and values of TRIZ

The core of TRIZ is its ability to systematically identify and resolve contradictions in the innovation process without relying on trial and error or serendipitous discovery. It guides inventors to innovative and efficient solutions through tools such as the Contradiction Matrix, the 40 Principles of Invention, and the Ideal End Result (Chechurin and Borgianni, 2016).

3. Methodology of TRIZ

Creative solutions can be found by viewing problems as "conflicts". TRIZ teaches us to recognise these repeating patterns, to understand the conflicts that exist and to use scientific effects to develop new methods. Applying TRIZ means applying these universal patterns to specific situations to discover generic solutions to problems (MindTools, 2024).

4. Application of TRIZ

The main contents of the TRIZ theoretical system include innovative thinking methods, technological system evolution rules, technical conflict resolution principles, and inventive problem-solving algorithms.

Specific example:

For example, in coal mining, in order to improve the coal production rate, operators hope that the cutting power of the drum shearer will be as large as possible. However, due to geological conditions or technical limitations, the height of the shearer cannot be increased excessively, so people use TRIZ theory defines the ideal formula to obtain the optimal solution of balance (Yao, W. et al., 2024).

References:

Chechurin, L. and Borgianni, Y. (2016) "Understanding TRIZ through the review of top cited publications," *Computers in industry*, 82, pp. 119–134.
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MindTools (2024), TRIZ A Powerful Methodology for Creative Problem Solving
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