



TRIZ

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Managing Innovation

TRIZ (Theory of inventive problem solving)

TRIZ was developed by the Russian Genrich S. Altshuller who worked on reviewing patents to derive his principles around which a wide range of apparently different problems can be solved. His approach classified solutions into five groups:

- Level one. Routine design problems solved by methods well known within the specialty. No invention needed. About 32% of the solutions fell into this level.
- Level two. Minor improvements to an existing system, by methods known within the industry. Usually with some compromise. About 45% of the solutions fell into this level.
- Level three. Fundamental improvement to an existing system, by methods known outside the industry. Contradictions resolved. About 18% of the solutions fell into this category.
- Level four. A new generation that uses a new principle to perform the primary functions of the system. Solution found more in science than in technology. About 4% of the solutions fell into this category.
- Level five. A rare scientific discovery or pioneering invention of essentially a new system. About 1% of the solutions fell into this category

From this analysis he suggested that over 90% of the problems engineers faced had been solved somewhere before. If engineers could follow a path to an ideal solution, starting with the lowest level, their personal knowledge and experience, and working their way to higher levels, most of the solutions could be derived from knowledge already present in the company, industry, or in another industry.

See https://www.mindtools.com/pages/article/newCT_92.htm for more.