

Mapping the Evolutionary Journey of TRIZ and Pioneering Its Next S-Curve in the Age of AI-Aided Invention

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Abstract. The Theory of Inventive Problem Solving (TRIZ) has revolutionized the space of innovation and problem-solving since its inception in the mid-20th century. This paper traces the evolutionary journey of TRIZ, exploring its development across different periods marked by S-Curves - a fundamental concept in TRIZ that represents the lifecycle of a system. It also examines the origin and evolution of TRIZ, from its basic principles' development to its global spread, computerization, and current integration into broader innovation management practices. This historical analysis underscores the flexibility and durability of TRIZ, demonstrating its capacity to navigate and shape various technological and methodological transformations throughout the years. As we chart this progression, we identify pivotal moments of growth, maturity, and transition, offering insights into the maturation and future trends of TRIZ. In the quest to predict the next S-Curve for TRIZ, we anticipate a potential shift towards AI-driven innovation, increased emphasis on sustainability, and further cross-disciplinary approaches. This paper invites a nuanced understanding of TRIZ's past, present, and emerging directions, contributing to a more anticipatory framework for problem-solving and innovation in the 21st century.

Keywords: TRIZ, Theory of Inventive Problem Solving, S-Curve, System Evolution, Future of TRIZ, AI and TRIZ, Cross-Disciplinary TRIZ, Innovation Engineering.