

GEN3 Innovation Discipline (G3:ID) - an Advanced, Business-Oriented TRIZ-based Methodology

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Abstract

GEN3 Innovation Discipline is an advanced TRIZ-based methodology developed starting from classical TRIZ through Innovative Technology of Design, TRIZplus and TRIZ++. Classical TRIZ experiences two major challenges. First, Theory of Inventive Problem Solving (Russian acronym – TRIZ) is focused on solving of inventive problems. However executive managers of industrial companies don't actually care about technical problems. They are facing a lot of business challenges instead. G3:ID includes several methodological tools that connect these business challenges to specific underlying technical problems of products and technologies. The representative tools are Main Parameters of Value (MPV) Discovery, Innovation Agenda Development, Combined Analysis of Market Trends and Trends of Engineering System Evolution, tools for Patent Strategies development, Adjacent Markets Identification, etc.

The second serious challenge of classical TRIZ is the fact that its deliverables are ideas. However industrial companies are looking for tangible new innovative products and technologies. G3:ID includes number of tools that serve to develop the idea to prove-of-principal prototype, then to working prototype, to a new product/technology, and then to a business impact of this product. The representative tools are Function-Oriented Search, Secondary Problems Identification, Global Knowledge Network, Smart R&D Labs, Synergy Index, Business Impact Identification, etc.

Advanced Seminar Outline

Introduction

The Seminar will focus on the most efficient applications of G3:ID – new advanced TRIZ methodology, a powerful approach that systematically builds and links a company's innovation approach to its business strategy. It is a system that creates new value through innovation, and that consistently delivers high returns on investment. It represents a paradigm shift - challenging the notion that most successful innovation relies on rare brilliance, inspiration, and chance; instead, successful innovation is more effectively achieved through a rational and disciplined process. G3:ID is a system of tools and processes that brings innovation to the level of a business discipline, similar to cost control.

G3:ID enables a company to build a winning innovation strategy by identifying the best opportunities for growth and by eliminating losing propositions. It provides solutions (technologies and designs) for realizing these opportunities. G3:ID also recommends what opportunities to focus on both short-term and long-term, supported by a fact-based assessment of market and technology trends.

The pivotal link between G3:ID Business Insight tools (what to focus on and when for the greatest ROI) and its

Product Innovation tools (how to practically realize the opportunities) are Main Parameters of Value (MPVs). These are critical parameters that define the value of a product and drive the purchase decisions of stakeholders. G3:ID identifies, defines, and translates MPVs into a set of clear technical parameters and requirements that ultimately define the technology goals and requirements of an Innovation Initiative.

The power of G3:ID lies in its ability to systematically reveal the non-obvious and uncover the blind spots few see. Furthermore, G3:ID is not a system focused solely on business strategy, nor is it a system focused entirely on technology - it links both, powerfully determining what opportunities to focus on and how to achieve them in practice.

G3:ID is able to transform this risky and ineffective process to one where the dead-end directions are eliminated upfront and the efficiency and impact of the innovation process is improved tremendously. G3:ID applies a set of tools and methods that enable companies to:

- Identify the best innovation opportunities and eliminate losing propositions quickly and impactfully.

- Identify and solve the "right" technical problems, enabling innovation opportunities to be realized rapidly and impactfully.
- Build a solid bridge linking business opportunities with technology problems and solutions through Main Parameters of Value.

Core Principles of G3:ID

Once MPVs are clearly established, G3:ID turns innovation from an art to a science using time-tested tools and methods. Let us review these basic tenets.

1. **Maximize risk-adjusted returns on innovation.** As shown, Innovation Initiatives vary from routine and minor, to incremental, to fundamental, to really breakthrough:

None -> Routine & Minor -> Incremental -> Fundamental -> Disruptive/Breakthrough

As you may surmise, a small number of initiatives on the right will produce the most impact. However, the initiatives on the left have the highest likelihood of success. The more risk you take, the more the reward. Where should a company invest based on market opportunities and trends and the current and future potential of a technology? In the world of right-brained brainstorming environments, this may be a subjective process. G3:ID transforms this into a rational and methodological approach that evaluates a risk-adjusted return for each Innovation Initiative, thereby maximizing the return on innovation dollars.

2. **Customers don't know what they cannot experience.** In innovation, the voice of the customer is always important; however, customers cannot be expected to predict new applications for evolving technologies and future markets. They cannot articulate what they cannot experience or envision. Other tools are necessary to augment the voice of the customer.
3. **Without addressing a Key Problem, innovation is an illusion.** Every innovation starts with a stated problem that is readily apparent. However, the key or underlying problems are generally very different from the originally stated problem. For productive product improvement, it is essential to identify the Key Problems; otherwise, efforts will be

wasted solving the wrong problem. G3:ID Problem Identification tools provide the capability to ferret out the key or underlying problems, enabling real innovation.

4. **Function is the purpose; product or technology is merely the tool.** Most Innovation Initiatives are bestowed upon managers who are the original developers or upon subject matter experts in the underlying product technology. While this domain knowledge is an asset in some product development and operations, it may become a liability for true innovation. G3:ID employs a powerful technique that detaches a product from its underlying technology and focuses on the function that a system is designed for. Function Analysis is critical for breaking psychological inertia - enabling problems to be solved in fundamentally non-obvious ways. It is used for identifying Key Problems, for formulating intractable problems in ways they can be solved simply, and for identifying technologies in remote industries that can be adapted to powerfully solve the innovation problem at hand. It dramatically extends the problem solving abilities and knowledge base of a single innovator or innovation team.
5. **Invent only what you can't borrow from a worldwide portfolio of expertise and knowledge.** True innovation happens by finding new solutions to problems. But invention is not the only way to find new solutions. In fact, inventing solutions is difficult and expensive. It is much easier to reapply existing solutions. G3:ID applies a set of tools for identifying and adapting technologies (solutions) in remote industries that often deliver or exceed the required function under more severe conditions. Expand your resource base to the worldwide portfolio of expertise and technologies. Borrow what someone else has already developed and proven to save time, money, and energy.
6. **Follow the Trends of Engineering System Evolution.** Driven by the competitive need to increase value, the main parameters of a system evolve over time. This evolution is not random; rather, it follows recognized Trends of Engineering System Evolution (TESE). Time and time again, these trends have held true for systems of all kinds. Therefore, it would make

sense to learn about these trends and take advantage of them in your innovation efforts. G3:ID includes several new Trends as well as a set of detailed mechanisms of TESE that were first introduced by G. Altshuller in classical TRIZ.

For example, a commonly known trend is the Trend of S-Curve Evolution. This trend shows that the path of Engineering System Evolution resembles a tilted letter 'S', with specific stages of inception, growth, maturity, and decline. G3:ID provides tools to identify where an Engineering System is on the S-Curve and what strategies will lead to the highest return on innovation investment. More specifically, should product development continue using the current technology or should it move to another technology based on a new principle of operation with greater development potential? There are many other trends, which, if followed correctly, help solve complex problems very efficiently.

7. **Refuse compromise.** It is very common for an Engineering System to have requirements that contradict each other. In other words, delivering on one parameter makes another parameter worse. The typical solution to address such requirements is a compromise, where you try to meet both requirements but adequately deliver neither. G3:ID provides the tools to resolve these contradictions such that both requirements are met completely as required.
8. **Forget inspiration, commit to systematic innovation.** A systematic, disciplined approach to innovation is the only way to fundamentally reduce innovation risk and to deliver sustained economic results from corporate investments in innovation.

The Seminar will concentrate on the most efficient tools and applications of G3:ID:

- Latent MPV Discovery
- Function-Oriented Search (FOS)
- Adjacent Market Identification based on RFOS (Reverse Function-Oriented Search)
- Key Problems identification
- Pragmatic S-Curve Analysis for Strategic Planning
- Clone Problems

- G3:ID for Patent Strategies
- G3:ID for Sustainable Design

The topics will give the participants insights into G3:ID tools as well as show how these tools can be used in various innovation applications.

Besides a number of exemplary case studies, major phases and steps of a G3:ID project will be outlined so that the participants will be familiarized with the execution details of G3:ID project procedure.