(TRIZ) Technology for Innovation

(book: chapter 11, pages 323-342)
Isak Bukhman (2012), *TRIZ Technology for Innovation* (English version). Taipei, Taiwan: Cubic Creativity Company

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Speaker Overview

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Isak Bukhman, TRIZ Master, President and Consultant of TRIZ Solutions LLC, and Vice President of the Altshuller Institute for TRIZ Studies.

Isak is a TRIZ, Value Methodology (VM) and Six Sigma specialist with more than 35 years of practice in the areas of product/process development and manufacturing.

As their chief methodologist, Isak spent almost ten years at Invention Machine Corporation (IMC) while the company established its global reputation. He now works as an independent global consultant and owner of TRIZ Solutions, LLC.

During recent years, Isak has been active delivering TRIZ training workshops and guiding the development of more than 100 innovation projects in 14 countries (USA, UK, Spain, Germany, Netherlands, Russia, Israel, People’s Republic of China, Hong Kong, Japan, South Korea, India, Taiwan, Singapore) for more than 40 leading global corporations, including Eaton, American Axle & Manufacturing, Johnson Controls, BYD, Bobcat, Shell, Masco-Behr, Baker Hughes, Chemtura, Henkel, Samsung, Intel, Microsoft, NXP, Johnson-Johnson, Mattel/Fisher-Price, Kaifa, GAF, Clorox, Corning, Compal, Epistar, General Dynamics Land Systems, Whirlpool, Alcon, Hospira, DePuyOrthopaedics, Flowserve, Savannah River Site, Steris, Biomerieux, Medtronic, Philips, Delphi, POSCO, Xinetics, BaoSteel and A.O.Smith Corporation.

Isak’s work has also included the delivery of numerous basic and advanced training seminars (some together with Genrich Altshuller), education and training of thousands of managers, engineers and researchers in TRIZ/Value Methodology, and – closest to his heart – seven years of child and adolescent creativity (TRIZ) education in his native Latvia.

Isak is a representative (Certification No A-01 of 10/22/2004) of the International Association of TRIZ (MA TRIZ) and is authorized to deliver TRIZ Certification courses and to certify TRIZ specialists (Levels 1-3).
# Instructor’s Experiences

## Cross-industry Customers: *The Global 5000 Innovates with Isak*

<table>
<thead>
<tr>
<th>Military &amp; Defense</th>
<th>General Dynamics Land Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automotive</td>
<td>Fanon, Hendrickson, AAM, BYD, BYD Auto, Johnson Controls</td>
</tr>
<tr>
<td>Oil &amp; Chemicals</td>
<td>Shell, BEHR, Baker Hughes, Chemtura</td>
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<tr>
<td>Consumer Goods</td>
<td>Henkel, Samsung, Intel, Microsoft, NXP, Sharp, Fisher-Price, GAF</td>
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<tr>
<td>Life Sciences</td>
<td>DePuy Orthopaedics.com, Medtronic, STERIS, Biomerieux</td>
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<tr>
<td>Industrial MFNG</td>
<td>Flowserve, Savannah River Site, Xingtices Inc., HV, POSCO, A.O. Smith Corporation</td>
</tr>
</tbody>
</table>
Agenda

1. Couple words about TRIZ

2. Understanding the System Development Process

3. Finally about (TRIZ) Technology for Innovation
1. Couple words about TRIZ

(book: chapters 1-10, pages 20-321)
TRIZ is a science of system development based on laws of systems evolution and the best practices of thousands of developers and scientists
TRIZ “Theory of Inventive Problem Solving” is derived from world-wide patents.

Problem solvers combine their knowledge with the knowledge of thousands of “silent” inventors and scientists.
TRIZ was founded in 1946 by the Russian engineer and scientist
Genrich S. Altshuller
(Oct. 15, 1926 - Sept. 24, 1998)
System of Standard Solutions
Set of rules for problem solving stating that many problems from different industries and sciences can be solved by the same conceptual approaches.

Inventive & Separation Principles
Set of concepts for eliminating System and Physical Contradictions.

Algorithm for Inventive Problem Solving (ARIZ-85C)
Set of sequential, logical procedures for problem solving.

Laws and trends of System Evolution
Set of certain and constant rules of being, operation, or change that describes recurring facts or events in the process of system development.

Problem Solving Tools

Knowledge Management Tools
Scientific Effects
Patents

Creative Person Development
Technique of Breaking Psychological Inertia and Creative Imagination Development
2. Understanding the System Development Process

(book: chapter 2, pages 28-37)
The subject of a project is selected at the onset of a project. It could be a cell phone, microchip, car, molecule, service, and so on. We call that subject as the system. That system, that initial situation in the present time, is our starting point of analysis. It is the first step of all project creation.
The system, as the subject of the project, should be changed in order to satisfy the requirements of customers, other systems for which this system is a component, the environment where the system is used, the technology that producing it, and so on.
Now it becomes clear what outputs of the developed system must be changed. We need two more screens to define how the system needs to be changed in order to create the required outputs. This can be done by changes to components and interactions of the system (subsystems).

Super-system Level:
- system customers, system environment, other systems for which system is a component,
- system producing technologies

System Level:
- defined by the subject of the project

Subsystem Level:
- components of system, interactions
3. Finally about (TRIZ) Technology for Innovation
(TRIZ) Technology for Innovation

is the process of using all parts of TRIZ in combination with other proven design development methods and best practices of effective project teams for system development and problem solving.
(TRIZ) Technology for Innovation is applying through Innovation Roadmaps for project creation and problem solving.
Included in most complete TRIZ/GF Innovation Roadmap, along with TRIZ components, are the following methods and processes, but not limited:

**proven design development methods**
- Value Analysis and Value Engineering
- Root Cause Analysis (RCA)
- Failure Modes and Effects Analysis (FMEA)
- Hybrid (Alternative) System Design
- Trimming
- QFD
- Lean Manufacturing
- Six Sigma
- DFSS

**processes based on best practices:**
- Project Scenario
- Concepts Evaluation and Selection
- Hybrid Concept Design
- Concepts Scenario

**Unique GF modules:**
- Semantic Concept Retrieval Technique – Semantic Search
- Company Profile
- Competitive Analysis of Intellectual Activity
- Technology Analysis
- Patent Citation
(TRIZ) Innovation Roadmap is a complete set of tools for the conceptual stage of product/process/service design.
(TRIZ) Innovation Roadmap for Project Creation & Problem Solving (most complete variant)

Part 1. System Analysis and Problem Statement

- Problem Selection for further solving
- What should be changed?

Part 2. Problem Solving, Concept Development

- How What should be changed?

Part 3. Concept Scenario Creation

- Realization of system development
- Concepts evaluation and selection

Created Concepts

- Patent Collections
- System of Standards
- Inventive Principles
- Scientific Effects

- ARIZ-85C-Part 1
  - Model of problem creation

- ARIZ-85C-Part 2
  - Analysis of Resources

- ARIZ-85C-Part 3
  - Determination of Ideal Final Result and Physical Contradictions

New System Design OR Existing System Development

Hybrid System Design

Root Cause Analysis

System Function Analysis

FMEA

Trimming

Selected Problems

TRIZ Parts

Proven Methods

Best Practices

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Thank you very much

Your questions are greatly appreciated!

Isak Bukhman, TRIZ Master, Global Consultant, Vice-President of Altshuller Institute for TRIZ Studies, President of TRIZ Solutions LLC

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