

Isak Bukhman (TRIZ Solutions LLC, USA)
Yoshihisa Konishi (Japan TRIZ Society, Japan)

A New Specialty – The Technology for Innovation

The focus of this project is the preparation of specialists in the Technology for Innovation at the academic level. Leading TRIZ companies and consultants deliver TRIZ as a complete and harmonic system in combination with other proven system development methods such as Value Analysis, Value Engineering, Root-Cause Analysis (RCA), Failure Mode and Effects Analysis (FMEA), Hybrid (Alternative) System Design, Lean Manufacturing, Design for Six Sigma (DFSS), Quality Function Deployment QFD and so on. We call this system of integrated methodologies a Technology for Innovation for System Development and Evolution.

Currently the Technology for Innovation for System Development and Evolution, based on TRIZ, is a profession for only a few engineers and scientists. We have not yet described a system for preparing such specialists beyond the accumulation of individual experience. Globally, only 40 universities (http://www.etriz.net/TRIZ_academic_institutions.pdf) offer TRIZ as a recommended course (for a maximum of 4 credits) or lecture. Only a few companies prepare TRIZ specialists through corporate development programs and offer training by allowing opportunities for applying TRIZ in project development and problem solving.

Our intention for the future is that the Technology for Innovation for System Development and Evolution become an academic specialty, a specialty like mechanical engineering, electronic and electrical engineering, and so on. We are not talking about TRIZ courses or about TRIZ as a subject for academic study. We are talking about a new specialty based on TRIZ and about developing specialists in the Technology for Innovation for System Development and Evolution. These specialists can apply their expertise in many diverse areas of our culture, including but not limited to:

- teachers in kindergartens, elementary, middle and high schools, with the object of preparing young students to think creatively
- teachers, researchers and scientists in universities and other institutions of higher learning developing the next generation of Technology for Innovation for System Development and Evolution specialists
- scientists, researchers and engineers in different domains of industry and sciences finding innovative solutions to our most pressing problems.

We begin by proposing three undergraduate and graduate programs for new this specialty: 1) Bachelors of Technology for Innovation for System Development and Evolution, 2) Masters of Technology for Innovation for System Development and Evolution I for Bachelors of Technology for Innovation for System Development and Evolution, 3) Masters of Technology for Innovation for System Development and Evolution II for Bachelors of other engineering specialty. We also propose TRIZ as the subject for any engineering specialty.

Specialists in the Technology for Innovation for System Development and Evolution should have a strong knowledge of subjects directly related to this specialty, and of subjects related to mechanical engineering, electrical and electronic systems engineering, as well as basic knowledge of other engineering specialties (applied chemistry, biomedical engineering, architecture, civil engineering, urban design, etc.). Therefore, this material will be included in the required and elective curriculum of both the Bachelors and Masters degrees.

We recognize the following steps as the cornerstone to establishing these undergraduate and graduate programs, and essential to preparing a viable pilot course of study:

- select Institutes of Technology in different countries to implement the pilot programs
- prepare learning materials (books, etc.)
- prepare new common and special subjects material
- train new teachers and lecturers in common and special subjects
- acquire accreditation from educational organizations (Departments of Education, Academic Councils and Boards of the selected Institutes of Technology)

- develop a Department of Engineering and faculty for the Technology for Innovation for System Development and Evolution at the selected Institutes of Technology

A preliminary list of subjects directly related to the Technology for Innovation for System Development and Evolution specialty are:

- Comprehensive History Technology (History of human technological society)
- History of Invention and the Patent System
- Industrial Society and the Environment
- TRIZ Overview
- Multi-screen Vision of System Evolution and Development and System Hierarchy
- Laws and Trends of System Evolution
- Stages of System Evolution
- Curves and Trends of System Generation and System Evolution
- System, Physical and Software Contradictions/ Inventive, Separation and Software Principles
- Forecasting System Evolution
- Algorithm of Inventive Problem Solving - ARIZ-85C I
- Algorithm of Inventive Problem Solving - ARIZ-85C II
- Substance-Field Modeling and Analysis and the System of Standard Solutions
- Substance-Field-Time-Space Resources and Parameters of Resources
- History of Science
- Scientific Effect and Phenomena Application for Problem Solving
- Patent Law
- Patent Collection and Strategies for Patent Searches
- Semantic Concept Retrieval Technique
- History of Fine Arts
- History of Theatre
- Science-Fiction Literature
- Creative Imagination Development I
- Creative Imagination Development II
- Creative Person Development
- Hybrid/Alternative System Design
- Value Methodology – System Function Modeling and Analysis
- Trimming Methods - Design Simplification
- Technology for Innovation, I
- Technology for Innovation, II
- New System Design
- Goldfire™ Software
- Hybrid Concepts Design and the Scenario of Concepts
- TRIZ Global Experience
- Project Management
- Interpersonal Skills, Team Building
- Logic, Cause and Effect
- Semantic Root-cause Analysis
- FAST: Function Analysis System Technique, Case Studies and Practice
- Six Sigma and Design for Six Sigma (DFSS)
- Lean Manufacturing
- Failure Mode and Effects Analysis (FMEA)
- Principles of TRIZ Education I
- Principles of TRIZ Education II

Isak's book "TRIZ Technology for Innovation" contains materials and ideas for the creation of textbooks for most of these subjects.

Please let us know (TRIZSolutions@comcast.net) if you have an interest and appropriate capabilities for exploring and implementing this new specialty of the Technology for Innovation for System Development and Evolution. We will send you more detailed materials and will let you know about progress in this area. It is our sincere hope that together we can make establishment of this reliably expansive discipline real and accomplishable.