TRIZ (Theory of Inventive Problem Solving) L1+L2&AI Practitioner

Information

Modern digital Artificial Intelligence (AI) technology is advancing human productivity and efficiency. Routine operation tasks and basic service communication are being assisted by machines. It is important that the skill sets of the existing and future workforce are developed to use the new technology and harvest its full advantages.

There are concerns that the new technology may replace humans but it's unlikely. The nature of jobs is expected to change. Complex problem-solving skills will become important and the ability to think creatively will be pivotal.

This course offers the development of advanced problem-solving TRIZ skills and demonstrates how to use TRIZ methods and AI machines to solve inventive problems. TRIZ or Theory of Inventive Problem Solving, is a Russian methodology discovered from the analysis of patents.

The course includes certification assessment for TRIZ Level 1 and Level 2 Practitioner recognition. The certification is awarded by Malaysia TRIZ and endorsed by the International TRIZ Association. The taught curriculum strictly adhered to the international certification standards.

Course	TRIZ Level 1 Practitioner
Facilitator	MyTRIZ-MATRIZ Certified Facilitator
Duration	5 days
Workshop fee	RM 5,000 per pax (Public session)
Eligibility	Open to all

TRIZ L1&L2+AI Practitioner Course:

- Introduction to TRIZ methodology
- History of TRIZ and global adoption
- Structured Problem=Solving Process
- Problem Identification Tools
- Solution Generation Tools
- Forecasting Techniques
- Application of TRIZ & AI Tools
- Actual Problem Resolutions

Customized Class

Training & Certification:
Dates and venue to be arranged

Face-to-Face/In-Person

HRDF SBL Khas CLAIMABLE

Interested, please contact:

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All innovations emerge from the application of a very small number of inventive principles and strategies.

MyTRIZ MALAYSIA TRIZ INNOVATION ASSOCIATION

TRIZ (Theory of Inventive Problem Solving) L1+L2&AI Practitioner

In partnership with
Inno Planet Sdn Bhd

Course Agenda

Day 1

Session Agenda

- What is TRIZ?
- TRIZ methodology & history
- Problem-Solving Process
- Function Analysis

Session Agenda

- Cause & Effect Chain Analysis
- Trimming
- S-Curve Transformation

Day 2

Session Agenda

- Recap Day 2 topics
- Engineering Contradictions
- 39 System Parameters

Session Agenda

- Contradiction Matrix
- 40 Inventive Principles
- Certification Assessment

Day 3

Session Agenda

- Recap TRIZ Level 1
- Physical Contradiction
- Strategy to solve Phy. Contradiction

Session Agenda

- Su-Field Model
- Zone of Conflict
- System of Standard Inv. Solution

Day 4

Session Agenda

- Recap Day 3 topics
- Scientific Effects
- Secondary Problems

Session Agenda

- Main Parameter of Value
- S-Curve Analysis
- Certification Assessment

Day 5

Session Agenda

- Recap Day 2 Learning
- TRIZ&AI benefits & risks
- Solve industrial problems with TRIZ&AI

Introduction to TRIZ methodology, history and adoption

- TRIZ is a theory created to systematize processes and procedures related to innovation and creativity in the solution of problems. TRIZ is a Russian acronym which can be expressed in English as ‘Theory for the Solution of Inventive Problems’ and consists of a theory, operating procedures and a range of tools created by Genrich Saulovich Altshuller (1926-1998) from 1946, with the objective of capturing the creative process in technical and technological contexts, codifying it and making it repeatable and applicable, in short a proper theory of invention.

- The capability of inventing is usually deemed to be a natural quality and not a process which may be systematized with a scientific approach. Altshuller did not agree with the idea and started from the study of patented ideas to come up with the deduction of the general principles governing the evolution of technical systems underpinning the theory of invention he formulated.

- TRIZ allows the analysis, the structuring of models and, finally, the solution of problems with a systematic approach based upon a series of subsequent stages and operating tools. Up to this day, the TRIZ methodology has proved to be the most efficient to solve inventive problems and one which may be learnt and used without any need for an innate individual creativity.

- Supporting the validity of the methodology is the diffusion in companies both in small and medium enterprises, as well as in several giants at a worldwide level, among which it is worth citing 3M, BAE Systems, Boeing Corporation, Daimler Chrysler, Dow Chemical, Ford, GM, HP, Hitachi, IBM, Intel, Johnson & Johnson, LG Electronics, Motorola, Kodak, NASA, Nestlé, OTIS Elevators, Panasonic, Procter & Gamble, Samsung, Siemens, Toyota, UNISYS, Xerox, Whirlpool, Saipem and BTicino.

Structured Problem Solving Process

- Provide step-by-step process to define a problem, analyze current situation, identify possible causes, develop solutions, discuss ways to implement solutions , standardize the solution and monitor the progress.

Function Analysis

- People buy functions/functionality and not products. Understanding function and functionality at the most basic level is fundamental to successful application of TRIZ. Solutions change, functions stay the same. Knowledge classification by function allows ready access to other's solutions.

Cause & Effect Chain Analysis

- A tool to refine a problem statement and drill down to find the root cause of the problem.

Trimming

- Typical engineers would add components to a system to enhance or solve a problem. The next tool after analyze the function of a system and understand the root cause is to eliminate components that may not be needed for the main function. The purpose is to search for a more ideal system that is less costly and has fewer components.

Ideality

- Each system evolves toward its ideal state. The ideal state of the system is where it has all the benefits with none of the harm or none of the costs. The system is better, faster, low cost, low error, low maintenance and so on (The ideal system consists of all positives and no negatives). The ideal system is a system that does not materially exist, while its functions are achieved (ideal system is no system). In the absolute sense Ideality is impossible to achieve, but in a relative sense ideality is achievable.

Course Outline

Recap – TRIZ Level 1

- Review key concepts from TRIZ Level 1 course including TRIZ history, Function Analysis, Cause & Effect Chain Analysis, Trimming, Ideality, Engineering Contradictions, System Parameters, Contradiction Matrix, Inventive Principles.

Physical Contradiction

- Physical Contradiction is applied when we are dealing with contradictions with a single parameter which creates a contradiction at two different values. All Engineering Contradictions have at least one Physical Contradiction. Resolve the Physical Contradiction through Separation techniques i.e. Separation in Space, Time and in Relation.

Substance Field Model

- Substance Field Model is a method of modeling a problem as two substances that interact through a field. This is in contrast to Engineering Contradictions which is modeling components and functions which interact between components. Study various types of Substance Field Model i.e. Complete, Incomplete, Insufficient, Harmful and Measurement/Detection Substance Field Models
- Concept of Zone of Conflict is used to identify the intersection of Useful Operating Zone and Harmful Operating Zone.

76 Standard Inventive Solutions

- Apply the 76 Standard Inventive Solutions to identify specific solutions to resolve the Incomplete, Insufficient, Harmful and Measurement/Detection Substance Field Models.

S-Curve Analysis

- All systems evolve in the form of an S-shaped curve. S-Curve Analysis is used to identify the various stages of a system through its characteristics and provides recommendations for evolution of these systems.
- The MPV (Main Parameter of Value) of the S-curve provides the voice of product.
- Every system can be staged in terms of Stage 1 (Birth), Stage 2 (Growth), Stage 3 (Maturity), Stage 4 (Decline) based on characteristics. Recommendations are provided to improve the system at each stage.

Scientific Effects

- Search of Scientific Effects from various industries to solve a problem by researching functions used in a Function Model.

Trends of Engineering System Evolution

- Introduction of Trends of Engineering System Evolution (TESE) which are statistically reliable lines of evolution that describe natural transitions of systems from one state to another. These trends help predict the future of systems and allow us to project the future features and characteristics of the system. TESE is one of the tools used for Patent circumnavigation.

Engineering Contradiction

- An engineering contradiction is a situation in which an attempt to improve one parameter of a system leads to the worsening (impairment) of another parameter. It can be reflected in a positive and negative interaction between two or more components

39 System Parameters

- System parameter is defined as any factor that defines a system and determines (or limits) its performance. The parameter typically describes the characteristics of a system. There are 39 parameters that typically set the characteristic of most systems.

40 Inventive Principles

- Inventive principle is a basic generalized rule that is accepted as fact, works in exactly the same way consistently and usually followed as a basis of reasoning or explanation of the invention. Altshuller screened 200,000 patents in order to find out what kind of contradictions were resolved by each invention and the way it was achieved. He synthesized down to 40,000 patents and from this he developed a set of 40 inventive principles.

Contradiction Matrix

- Systematic method of solving engineering contradictions without trade-off solutions. User identifies improving and worsening features of the engineering system.