



Invited Plenary Speech

Super-system trimming for innovative product identification and design

Speaker: Dongliang Daniel Sheu

President, International Society of Innovation Methods

Editor-in-chief, International Journal of Systematic Innovation (SCOPOUS)

Area Editor, Computers & Industrial Engineering (SCI)



Speaker Biography:

Daniel has 9 years of industrial experience primarily in the electronic industries with Hewlett-Packard, Motorola, and Matsushita prior to joining National Tsing Hua University. He served in academe for 25 years. Daniel has expert knowledge in innovation methods including TRIZ. He has developed more than 20 new TRIZ tools. He has taught/facilitated more than 100 sessions of industrial training/consulting courses in more than 70 companies. He is a certified TRIZ Expert in Training and problem-solving consultation. His areas of expertise include Intelligent Innovation Methods, Patent Technical Analysis, Engineering Design, and Factory Diagnostics. He has been invited to deliver keynote/plenary speeches 20 times at international conferences and 25 times at national conferences. Daniel published 47 peer-reviewed journal papers, and 205 conference papers. He authored 13 books and translated 4 books. Daniel holds 16 patents from Taiwan, China, and USA.

Abstract/Outline

99% of engineers invariably use “substitutions” or “additions” to solve problems. That is: to solve a problem, engineers tend to substitute parts or add new parts to resolve a problem. Trimming is about reducing parts from a system to solve a problem without compromising any functionality or even with improved functionality. Trimming has many benefits which include: 1) reducing negative effects such as harmful, excessive, insufficient, and ineffective functions; 2) reducing cost, often drastically; 3) reducing the complexity of design, manufacturing, maintenance, and usage; 4) reducing points for errors; 5) improving performance/cost ratio; and 6) achieving patent circumvention and/or regeneration.

Currently, most of the trimming efforts involve reducing parts from within a system. This talk proposes an approach to trim parts at the super-system level by systematically removing parts from heterogeneous multiple systems to produce a new integrated product that has combined functions for the constituent products. By doing so, a more functional innovative new product can be designed with fewer components than the sum of all constituent products.