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WARNING CALL: TRIZ IS LOSING POPULARITY

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Abstract

In this paper, the author investigates the following issues: (1) why TRIZ, despite its high efficacy, still does not enjoy the recognition it deserves; (2) popularity of TRIZ around the world; (3) how industry is currently using TRIZ to develop new products/processes. The results of this research have revealed that TRIZ is still one of the least known and least popular innovation methodologies in the world; TRIZ has a currently recognized niche in the innovation process, but it is limited to generating solutions for technical problems; furthermore, world interest in TRIZ is declining. The overall conclusion is: in its current form, TRIZ is approaching the maturity stage of its evolution and further development of TRIZ should include (a) the development of business-oriented TRIZ tools to be used at the early stages of new product/process developments, and (b) close integration with existing best industry practices for developing new products/processes.

Keywords: Certified TRIZ specialist; Innovation; NPD; TRIZ; TRIZ integration; TRIZ popularity.

1. Introduction

Since TRIZ was introduced by Genrich Altshuller at the end of the 1940s, it has been greatly developed and refined both by Altshuller and by his numerous colleagues and followers.

Over time TRIZ has demonstrated great efficacy in solving difficult technical problems; many books on TRIZ have been issued; and thousands of people have been taught TRIZ and become certified TRIZ specialists.

Despite this, TRIZ has never become a standalone best industry practice for developing new products, technologies and services. In fact, very few innovations have been developed using TRIZ.

Moreover, even after years of intensive development, TRIZ still has not manifested itself as a serious science: for example, as shown in Chechurin's recent review [1], only 1200 publications with the word "TRIZ" were indexed in Scopus (the largest database of peer-reviewed literature from scientific journals, books and conference proceedings) by July 2014; another paper by Chechurin et al. [2] indicates 1333 publications indexed by about mid-2015. Considering that Scopus indexes about 21,000 scientific journals and contains about 50 million records, this number is quite small.

The goal of this paper is to clarify the current status of TRIZ methodology and its acceptance in the world, and to identify why TRIZ does not play the important role it deserves.

2. Worldwide propagation of TRIZ is slowing down

At first glance, TRIZ has circulated around the world fairly successfully: as shown by Goldense [3], the number of certified TRIZ experts worldwide has grown steadily (see Fig. 1), reaching the impressive number of 18,000 in 2015.

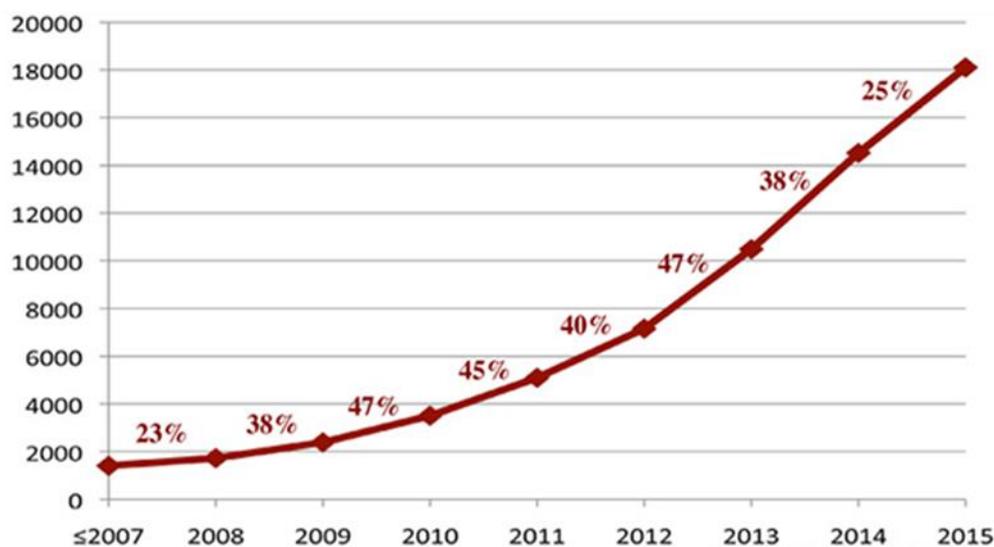


Fig. 1. The total number of certified TRIZ specialists: growth over years [3]

This number, however, is distributed across countries very unevenly [3], as shown in Fig. 2:

- 65% of certified TRIZ specialists are now located in South Korea where the government has actively supported the propagation of TRIZ;
- Most of the remaining 35% is spread among China, Germany and Russia;
- A few other countries have a miniscule share of TRIZ specialists.

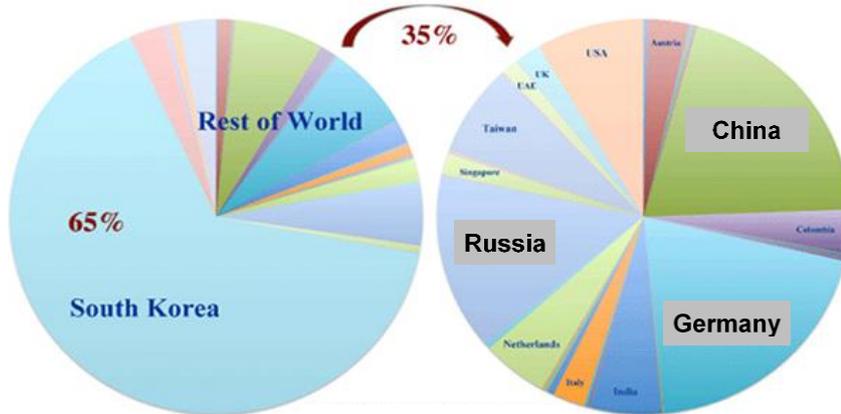


Fig. 2. The total number of certified TRIZ specialists: breakdown by countries (2015) [3]

Fig. 1 shows that, after peaking in 2013, the percentage of specialists certified annually begins decreasing rapidly.

Fig. 3 also shows a decrease, but in absolute numbers (this graph is derived using the data from Goldense’s paper [3]). This likely reflects the fact that the popularity of TRIZ in South Korea, a major contributor to the number of TRIZ specialists, started to decrease at that time.

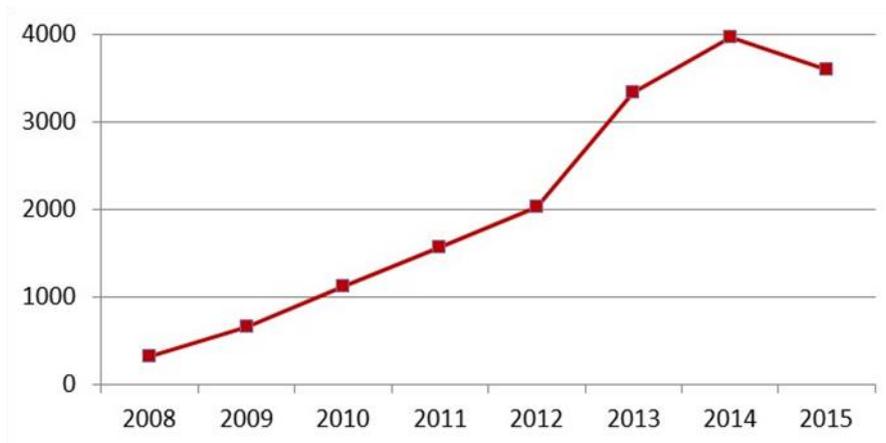


Fig. 3. Number of TRIZ specialists certified per year

From Fig. 1 and Fig. 3, it can be concluded that the popularity of TRIZ has reached its peak, i.e. TRIZ in its current/classical form is approaching or at the 3rd (maturity) stage of its evolution.

3. World interest in TRIZ is declining

The research conducted in 2012 by Patrishkoff [4] sounds another warning signal for TRIZ developers that world interest in TRIZ is currently diminishing. The research is based on Google statistics of Web searches.

As seen from Fig. 4, by 2007 worldwide interest in “Innovation” decreased ~25% relative to 2004. After 2007 it remains stable.

In contrast, since 2004 worldwide interest in “TRIZ” has steadily decreased, and in 2011 it was down 55% (see Fig. 4).



Fig. 4. Worldwide web search interest in “Innovation” and in “TRIZ” [4]

The current decline of world interest in TRIZ is confirmed indirectly by the dramatic reduction in the amount of web pages containing the word “TRIZ”, which has been observed in the last few years (see Fig. 5).

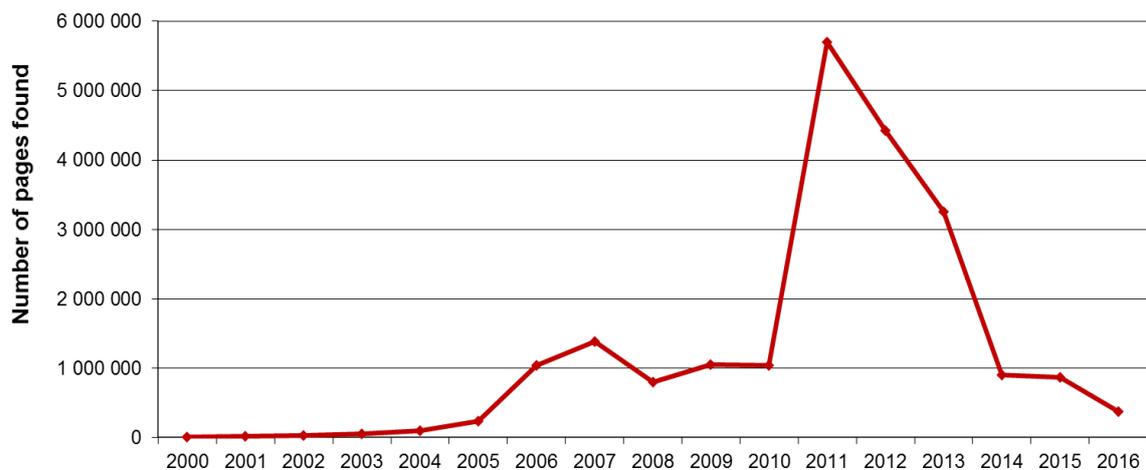


Fig. 5. Number of web pages containing the word “TRIZ” found by Google, by years (this data has been kindly provided by Alex Zakharov)

Based on this data (Fig. 4 – 5), we can conclude that worldwide popularity of TRIZ has already passed its peak and is now declining despite the fact that world interest in innovation remains stable.

This most probably means that competing methods for innovation have become more widely adopted than TRIZ.

4. World awareness of TRIZ remains relatively low

In order to identify how well TRIZ-related information is presented in the public domain, the author has conducted a brief study. This involved a Google web search for the most popular competing methods and processes for solving technical problems and developing new products (NPD).

The following keywords were used to perform the search: lean method; six sigma; brainstorming; crowdsourcing; design thinking; stage-gate; kaizen method; triz. The results of this exercise are shown in Fig. 6.

As seen from Fig. 6, there is far less TRIZ-related information in the Internet than information on other problem solving and NPD methods; e.g. the number of web pages related to Lean and Six Sigma are two orders of magnitude more than TRIZ-related pages.

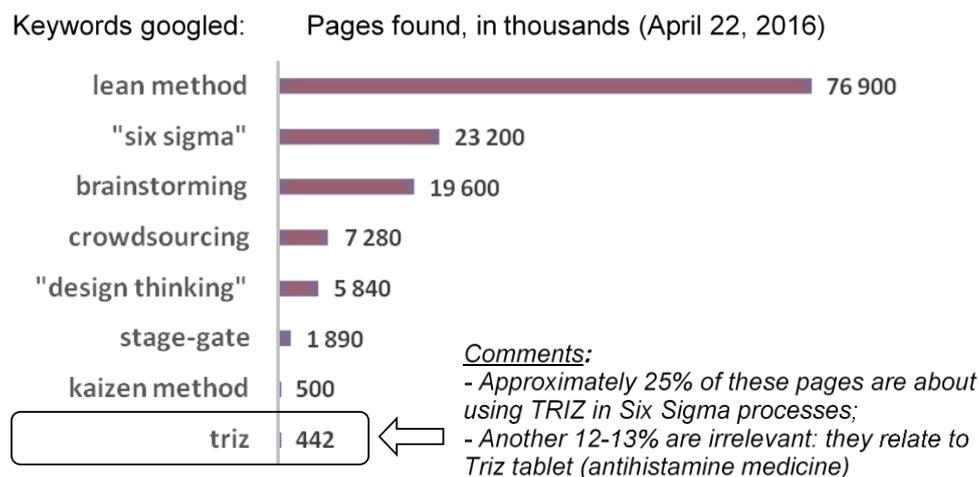


Fig. 6. Results of Google search for popular problem solving and NPD methods

This seems to be an accurate representation of how little the world knows about TRIZ compared to the other methodologies for innovating considered in the current research.

5. Recognized area of TRIZ application is narrow

Despite the fact that TRIZ is not very well known to the world and that whatever world interest does exist is falling, it must be admitted that TRIZ

has been recognized and adopted by such popular best industry practice for NPD as Design for Six Sigma (DFSS) [5, 6].

Unfortunately, as shown in Fig. 7, TRIZ is used in the DFSS process only at the beginning of the concept generation stage – when, or if, it is necessary to solve difficult technical problems.

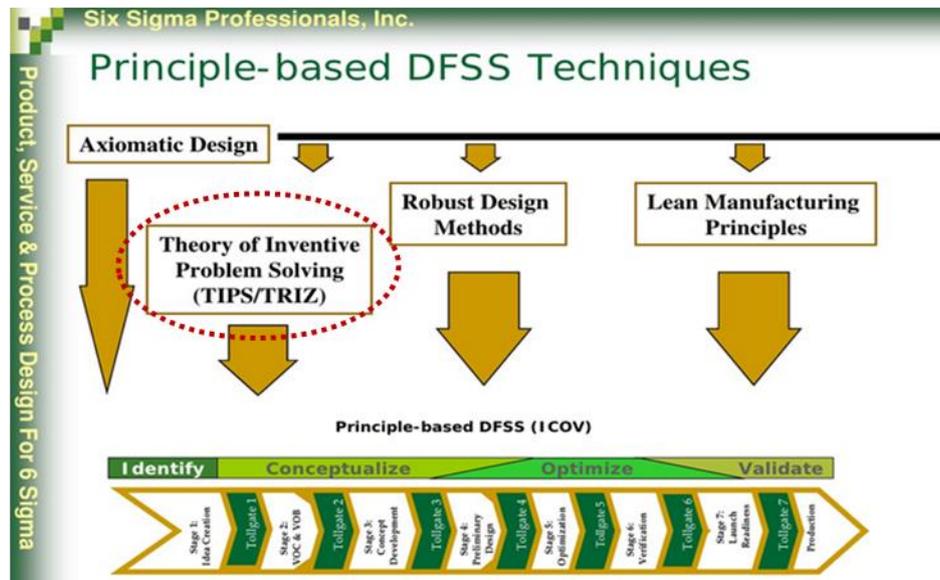


Fig. 7. TRIZ’s recognized place in the DFSS roadmap [5]

It is clear from literature on Six Sigma, including the DFSS handbook by Yang and El-Haik [6], that TRIZ tools employed in the DFSS process include only basic problem solving tools from old “classical TRIZ”, such as 40 Inventive Principles and the Contradiction Matrix, S-curve analysis, Trimming, etc.

Using TRIZ tools allows for reducing technical risks associated with an NPD process. This is why the idea of integrating TRIZ into best industry practices has been popular among TRIZ developers since early 2000-2001. However, all publications on this matter so far have included only basic TRIZ tools – see, for example papers by Domb [7], Šibalija and Majstorović [8], and Ilevbare et al. [9].

More advanced tools developed in modern TRIZ, e.g. Function Oriented Search (FOS) [10], Main Parameters of Value (MPV) analysis [11, 12], and Voice of the Product (VOP) [13], are not yet recognized by the world, and, therefore, not used in existing best industry practices.

The overall conclusions for this section, which seem to correlate with conclusions found in Chechurin’s review [1], are:

1. TRIZ is currently adopted by some popular NPD methods alongside other (non-TRIZ) tools;
2. The area for applying TRIZ, as currently recognized by the world, is too narrow as it is limited to the design of products/processes;
3. Recognized, and most frequently used, TRIZ tools are the simplest basic tools from old, classical TRIZ.

6. Discussion

As mentioned above, classical TRIZ seems to be reaching the maturity stage of its evolution just as world interest in TRIZ is declining.

According to a TRIZ S-curve analysis, this stage will eventually be followed by stagnation and it is fair to expect a more advanced innovation methodology to spark a new S-curve in the near future.

This new innovation methodology may be a modern, next generation TRIZ – providing that it overcomes the main flaw in classical TRIZ: neglect of business and market needs.

In their report, Ilevbare et al. [9] clearly describe the strength and flaw of TRIZ in current use: “TRIZ has its major strength in its ability to solve difficult innovation problems in a systematic and logical manner. However, it appears to pay little attention to linking the inventive problems and their solutions to market needs and drivers. Therefore there exists the unpleasant possibility of TRIZ providing a solution to a problem which has little or no profitability or commercial benefit to an organization.”

Modern TRIZ, however, has tools such as MPV analysis [11, 12] and VOP approach [13], which are aimed specifically at addressing business/market needs. These tools may eliminate the main drawback of classical TRIZ and allow for deeper integration of TRIZ into best industry practices.

This integration should involve using modern TRIZ tools at all stages of the NPD process, as suggested by the author in an earlier paper [14].

7. Conclusions

Based on the results of this research, the following conclusions can be made:

- The world’s interest in TRIZ is declining and classical TRIZ seems to be reaching the maturity stage in terms of its propagation and popularity.
- The world-recognized application of TRIZ is currently limited to solving difficult technical problems at the concept generation stage.

- Only basic, classical TRIZ tools have been adopted for this purpose by best industry practices, e.g. by DFSS methodology.
- Further development of TRIZ should focus on (but not be limited to)
 - Developing business/market-oriented tools that are missing in classical TRIZ. Examples of such tools are VOP and MPV analysis;
 - Integrating TRIZ more fully with the most popular best industry NPD practices, such as Six Sigma, DFSS, etc.
- Addressing business/market needs may initiate a new S-curve of TRIZ popularity and result in much wider adoption of TRIZ.

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