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Paper

How to make TRIZ work in your organization?

## Summary

The TRIZ way of working is gaining popularity in technology companies, and most companies start by creating introduction programs and training some employees. This paper outlines a number of challenges that the freshly trained "TRIZnik" may face when returning from the training, as well as a number of recommendations for him or her; the direct manager, but also the company management, to safeguard the successful deployment of this powerful innovation tool.

## About the author

Christoph Dobrusskin, MDes, MBA, is an Innovation Consultant who supports innovation projects and facilitates creative workshops for Philips Electronics as well as for other companies. For more than ten years he has used TRIZ, lateral thinking and other creative tools in helping his clients to innovate. He is certified as a TRIZ specialist MA TRIZ level 3, accredited to teach MA TRIZ Level I and regularly teaches engineers in TRIZ. He speaks regularly at international conferences on TRIZ and is a member of the Practitioners Committee of the European TRIZ association ETRIA. He is the author and co-author of numerous patents. Christoph can be reached at Philips innovation Services, Industry Consulting, Eindhoven, The Netherlands, E-mail: [industry.consulting@philips.com](mailto:industry.consulting@philips.com).



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## Introduction

For some time now I am regularly training groups of engineers from various organizations according to the MA TRIZ level 1 requirements. Participants learn not only the basic tools of TRIZ, but any questions they may have on the technique can be immediately answered and during the three day course they also practice on their own problems. This gives the participants a solid starting point to apply TRIZ tools and TRIZ thinking in their everyday engineering work.

However when the freshly certified TRIZniks are back at their office, lessons learned are not always easy to apply, so I have summarized a few tips and tricks in the following pages, to help embedding the TRIZ way of thinking in the daily life of an organization:

## 1. Team up

When talking to TRIZ practitioners from outside Philips, a lack of support and community after the initial training is frequently mentioned as one of the top reason for the failure of company internal TRIZ programs [1]. So when I am asked to train engineers I always insist on having at least two, preferably three members of any specific group trained together. This has a number of advantages:

- Firstly, during the training the participants can start working together on one of their own projects, so they familiarize themselves with using the TRIZ methods and tools in circumstances comparable to their daily work.
- Secondly as they have been together in the same training, they find each other easily when they encounter problems in applying TRIZ after the course, and the barrier is much lower to ask the colleague at the next table, rather than to call an external expert (though I will happily advise if I am available).

There are other ways of staying connected to the TRIZ community of course. I always invite the participants in my course to join the Philips internal TRIZ user group. And external to Philips there are quite a number of TRIZ related internet sites that also provide interesting information and discussions. This serves as another way to stay in touch with equal minded people, to share experiences, to post questions, to contact specialists and more generally to keep in touch with “what’s up”.

Furthermore, if possible at all I try to follow up the trainings at regular intervals to support the participants in integrating TRIZ in their daily practice.

## 2. Take ownership

Another important aspect of introducing TRIZ in an organization is to use TRIZ regularly. The time pressure often experienced in the daily work of engineers pushes newly trained TRIZniks to lapse into their usual way of working and not to use TRIZ even when appropriate opportunities arise. It is therefore recommended to line up suitable projects up-front, so when the training ends, there can be a natural continuation and application of the newly acquired skills.

On a more personal note it may be helpful to plan concrete actions individually, and to execute them conscientiously. Writing down a list, (at the end of the training) outlining the actions you should perform to implement TRIZ and integrate it in your daily work next week, next month and next year may be a first step, but can be quite effective if followed up.

## 3. Be selective

The participant of a training as well as their group leader, should have a clear view on how TRIZ can help, and how best to integrate it in the daily work. Initially one should realize that TRIZ is not the silver bullet for all engineering problems: not all engineering work should be performed according to TRIZ. A large part of the normal engineering work is concerned with normal engineering problems anyway [2] and

normal engineering tools and approaches are required. For example, if a support is too weak to hold something, increasing the material thickness to add strength is in most cases sufficient and no deeper thinking is required. However, at times the “going gets tough” and contradictions need to be solved, and then TRIZ will be the right tool. To keep with the example: if the support is too weak, but for some reason the thickness or weight cannot be increased, then we have a contradiction - and TRIZ may be able to help.

But then how does one know when it is useful to employ TRIZ? The answer is simple and logical: by doing a basic problem analysis at the beginning of a project [3]. The initial start is a clear formulation of the problem as well as a drawing of the situation. Following these steps, a multitude of different tools are available for further analysis and some may already be integrated in a company's way of working. Typical examples include performing a cause-effect-chain analysis, function modeling, using the concept of Ideality and using the system operator. Three distinct advantages arise from this step:

- Often it can easily be determined which aspects of the problem should be solved; the tools help to identify the underlying root causes, not just the symptoms. Therefore the problem situation itself is better understood as is its environment, and a multitude of problems can easily be ranked.
- Furthermore, as the main problems of the project are highlighted during the analysis it becomes much easier to decide how to tackle them. Contradictions, resources and function disadvantages can be clearly seen and a decision can be made if TRIZ tools are indeed the best way forwards.
- Finally, not only do the analysis tools help the engineer to much better understand the problem at hand, but they also constitute excellent communication tools. A Philips external client of mine, for example, decided after following our TRIZ training that he would use those tools deliberately to communicate with his (engineering) clients.

Spending a little time at the beginning of any project to perform a systematic analysis of the problem situation is therefore an important step to focus the project activities, help decide the project approach and also a tool to communicate to stakeholders during the process.

#### 4. Link to processes and systems in your organization

There are of course numerous other ways to help integrate TRIZ better in the daily work, and some are briefly sketched here:

- **Establishment of a dedicated TRIZ group in your company.** Members of this group should be well-trained, and would have the tasks of supporting complex and difficult projects, performing training sessions and guarding the use of TRIZ within the company development processes. They can also help with the consistency of the TRIZ use by establishing a clear way of working and certification process. Groups like this successfully operate in a number of large organizations such as SAMSUNG, POSCO and SIEMENS to name just a few [4].
- **Link of TRIZ with other business excellence tools.** TRIZ, Design for Six Sigma and similar other initiatives can benefit from each other. Six Sigma initiatives are excellent in identifying problems, for example, but lack the dedicated problem solving tools that TRIZ can provide. So linking them to each other enables synergy to take place [5]. TRIZ also can help to create patents, to make them stronger and also to circumvent competitor IP [6]. At GE, for example, TRIZ is used to circumvent competitor patents [7]. Hyundai is following a similar approach [8]. According to verbal testimony both companies are currently anchoring TRIZ into their IP creation approach.
- **Corporate governance on TRIZ.** After all, having a “tool that helps you to be creative” is often seen as counter-intuitive and elicits rejecting responses. Furthermore, creative people do not always see the value of structured approaches. However, companies can benefit better from using TRIZ by giving top-down support. At the Samsung research laboratories SAIT, for example project proposals are rejected and the proposers are reprimanded if the proposals are not supported by TRIZ based research [9]. The manager in question is convinced that without this research he is much more likely to waste money and time.

- **HR incentives.** Some companies use HR incentives to promote the use of TRIZ. By linking pay and promotion to passing different TRIZ levels and performing successful TRIZ projects, the TRIZ way of thinking is much easier introduced into a corporate culture. Thirteen years after the introduction of TRIZ to SAMSUNG half of all employees at their central research facility are trained in TRIZ [10].

## Conclusion

A number of success factors need to be in place to successfully introduce the TRIZ way of thinking into an organization. The training of the employees is a first step; however supporting actions should be taken by the employees themselves as well as by their manager to improve the chance of successfully making TRIZ a way of working for innovation. On a different scale the management level of companies can structurally support the introduction of TRIZ with a number of actions.

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