

Book review: *Pocket TRIZ for Six Sigma*
By Geoff Tennant
Reviewed by Larry Ball, Thomas Kling, and Paul Sheehy

Details: 96 pages, wire bound. ISBN ISBN 0-9546149-0-9. Published by Mulbury Consulting, 2003. Cost £5.95 or €8.93, plus shipping. Order from <http://www.sixsigmatriz.com>

Our three reviewers are respectively, TRIZ expert and instructor in the Six Sigma program at a major aerospace company, Six Sigma Master Black Belt, "TRIZ Advocate" and TRIZ instructor at a major multi-national chemical company, and Six Sigma Master Instructor at a major international Six Sigma consulting firm. The editors wanted the readers to get opinions directly from people who would use this book or refer others to it.

Pocket TRIZ for Six Sigma fulfills its name. It is small enough to fit in a shirt pocket and it is designed to help integrate TRIZ and Six-Sigma tools. The reading is enjoyable and I found a lot to think about.

The inclusion of TRIZ into Six-Sigma and DFSS has brought a host of new people into the TRIZ world. Most Six-Sigma practitioners are well attuned to using disciplined processes to achieve results. Many are problem solvers and inventors by nature and find a natural attraction to TRIZ. If you are a Six-Sigma practitioner in search of tools to help you innovate or a TRIZ practitioner that is unfamiliar with Six-Sigma tools, you will find this book to be useful.

It is designed for both the novice and seasoned practitioner. For the novice, the material gives a focused and condensed view of classical TRIZ and a variety of Six-Sigma tools. For the seasoned practitioner, the explanations are brief enough to jog the memory.

There are three main thrusts to this book:

1. Briefly explain the range of TRIZ methods and tools
 2. Explain the synergy of TRIZ and Six-Sigma. Several Six-Sigma tools are highlighted which compliment the TRIZ tool set.
 3. Focus the reader on the use of the 40 principles. A high percentage of the book is devoted to detailed descriptions of each principle. The descriptions include classical explanations, new examples and philosophical discussions.
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This tightly written pocket guide achieves its stated goal of "gather together in a handy-to-use reference the basic and essential elements that 'make TRIZ work'." It also spends much effort in detailing the synergy that can be achieved by melding TRIZ and Six Sigma. I use the broader term Six Sigma as the book shows linkage to both DMAIC and DFSS. Like Caesar's Gaul, the book may be divided into three parts: 1) What is TRIZ, 2) Relationship between TRIZ and Six Sigma, and 3) Handbook of TRIZ tools.

The Author starts out with a brief summary of TRIZ and its basic components. The book meets its goal of refreshing those who have some knowledge of TRIZ but is not sufficient (nor obviously intended) for initial TRIZ training. The author then spends considerable effort making the case that TRIZ + 6s together are greater than the sum of their parts. Examples:

- “Six Sigma does not embrace the concept of the contradiction. DMAIC projects improve just one CTQ metric to avoid any conflict.”
- TRIZ “lacks real business drive and purpose as well as customer focus.”
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I enthusiastically agree with the stated premise that the basic TRIZ toolkit for DMAIC can be centered about the 40 Inventive principles together with the concepts of resources and ideality.

The author identifies two ways in which TRIZ is likely to be used in DMAIC. First, surmounting conflict (contradiction) in the execution of the project and second, by enhancing the improvement plan by overcoming inherent contradictions or identifying idle resources. The relationship of TRIZ to DFSS is stated more strongly; “It is almost as if TRIZ and DFSS were made for each other!” I share these beliefs.

The author, after concluding a discussion of the similarities and differences between Six Sigma and TRIZ, develops a list of TRIZ tools and presents a clean matrix as to where they may be used in DMAIC. A discussion of the tools follows. I found that the development of the tools was precisely at the level I look for in a pocket handbook that is meant to be used to jog the memory, not teach from scratch. I particularly liked his crisp development of the contradiction matrix. As an additional benefit, rather than provide the matrix in print form (Note: the book has small pages), he provides a link for a free download of an automated Excel spreadsheet. It works well. The 40 Principles take up a significant portion of the book and are very readable.

My overall impression of the book is that it is of value to Six Sigma practitioners who have had TRIZ training. In spite of the brevity/high level of the TRIZ development, I also believe that this book may be of use in convincing those in the general Six Sigma community of the benefits of TRIZ training. I will close with three of the author’s comments.

- “Six Sigma is founded on the Practical and Commercial application of existing tools and techniques.”
 - “...use of TRIZ in Six Sigma should aim to use the tools and techniques to enhance Six Sigma DMAIC and DFSS projects, not as a study in innovation for their own sake!”
 - The Six Sigma corporate approach and team-based DMAIC methodology can bring tremendous benefits to TRIZ practitioners.”
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"Pocket TRIZ for Six Sigma, Systematic Innovation and Problem Solving", by Geoff Tennant, is a great little reference. If you are using Six Sigma methods, it can get you started using the Theory of Inventive Problem Solving. Should you be a TRIZ practitioner, it can help you identify which TRIZ tools have greatest application at various points within the Six Sigma methodologies.

The first ~8 pages gives the origins & overview of TRIZ. Over the next 10, Pocket TRIZ gives very brief, concise descriptions of the commonalities and differences between TRIZ, Six Sigma MAIC (process optimization) and Design for Six Sigma; the author then describes the complementary aspects of Six Sigma and TRIZ, and how each can benefit by their use in conjunction.

A tools list details which specific TRIZ tools apply at the various MAIC phases; only one out of 40 did not correspond to my own matching. Short summaries then overview the listed TRIZ tools. *Pocket TRIZ* apportions a pair of pages each on the concept of contradictions, Ideal Final Solution, function and attribute analysis (tool-action-object), and resources. Over about a 4 page spread, a paragraph overviews each trend of evolution. A page each describes nine screens (a.k.a. system operator), s-curves, fields, Smart Little People, a "systems vs. process" view (to differentiate the respective TRIZ & Six Sigma focuses) and inventive standards. A number of these summaries have checklists useful for an experienced TRIZ user, though not a complete "how-to" procedure for use. Many make connections between the TRIZ tool and Six Sigma use (e.g. nine screens to multi-generation planning, TRIZ resources expanding the notion of resources in flowcharting...).

The Effects knowledgebase is given only honorable mention, perhaps not unexpected for a book limited to pocket size. Finally, non-TRIZ, but often-used Nominal Group Techniques for solution evaluation, and the Pugh concept evaluation matrix rate a page apiece in this summaries half of the book.

The last half of *Pocket TRIZ* is devoted to the 40 Inventive Principles and contradictions. This section is comprehensive enough to be of direct and full use, with a page-per-principle examples set. In addition, the philosophy behind each inventive principle is elaborated, sometimes with related or "opposite" principles noted. As such this section helps convey much about the TRIZ mindset that might otherwise be missed. A description of how to use the matrix is in *Pocket TRIZ*, though not the matrix itself. The Mulbury Consulting link to the electronic version of the matrix is included.

Tennant ascribes greater importance to the 40 Principles than any other author I've seen-- e.g. the claim that "All innovation stems from the 40 IP's" seems overstated-- or maybe it's just his lots-of-superlatives style, perhaps to be expected from a practitioner used to taking contradictions to their extremes...

You can't expect a booklet designed to fit in purse or pocket to include the entire span of TRIZ and its potential with Six Sigma, but *Pocket TRIZ for Six Sigma* does a handsome job of concisely capturing the key interconnections. It will be of use for experienced and neophyte practitioners of both methodologies, alike.