



## Breakthrough Innovation – The real Innovator’s Dilemma

Many companies today are being challenged to deliver “big swing” products that will generate future growth and market share. Sounds simple, but the search for market breakthrough solutions can be anything but. The modern day innovators challenged with this task are faced with a stark dilemma: to come up truly disruptive solutions, we have to innovate, but... innovation often means risk, uncertainty, cost and wasted time. Innovators need an approach which enables them to make rapid progress systematically towards the strongest potential solutions. TRIZ provides this approach.

TRIZ is the Russian acronym for the *Theory of Inventive problem Solving*. It comprises a unique system of scientific methods to identify and develop breakthrough technologies and products. It was developed by *Genrikh Altshuller* and his school in Russia over the last 50 years and was used in the Soviet defence and space programs before migration to the West began in the mid 1990’s. TRIZ is now used by many companies worldwide. Here are some examples of the results they have achieved:

		<ul style="list-style-type: none"> <li>• 2000: TRIZ Implementation started</li> <li>• 2005: Samsung credits TRIZ for helping them to overtake Sony</li> <li>• Over \$2Bn added to the bottom line</li> </ul>
		<ul style="list-style-type: none"> <li>• P&amp;G used TRIZ to develop Crest Whitestrips</li> <li>• Most successful new product launch ever with over \$200M sales in Year 1</li> </ul>
		<ul style="list-style-type: none"> <li>• 767 Air-to-Air refuelling tanker sold to the governments of Japan and Italy - total contract value \$1.5Bn</li> <li>• Customers preferred TRIZ inspired compromise-free solutions</li> </ul>
		<ul style="list-style-type: none"> <li>• Next Generation coffee brewing system with patented no-mess cappuccino system developed using TRIZ</li> <li>• Incremental sales of \$20m per year</li> </ul>



## What does TRIZ do?

Altshuller and his team studied thousands of successful innovations and discovered that all technological systems (anything from a pencil to a super tanker) evolve along a finite set of universal trends. This means that the transition from one technology to the next is predetermined. Given the knowledge of the trends of evolution and an understanding of the stage of evolution of your system, it is possible to predict the next steps for your products and processes. Altshuller's studies also showed that true breakthrough solutions resolve trade-offs (where one aspect of a system can only be improved at the expense of another aspect) and identified universal principles to develop "no-compromise" solutions. Today the results of Altshuller's research are routinely used to rapidly generate inventive solutions to tough-nut problems in a wide range of diverse industries.

## Case Studies

### Case Study 1:

**Problem:** how to make an authentic, hassle-free cappuccino in the office?



**Action and Outcome:** An office coffee machine manufacturer was looking for ways to increase the appeal of their coffee system by providing authentic coffee shop drinks in the office. Unfortunately the best method available to make cappuccino drinks involved a steam wand to froth and heat the milk, which was seen by those working in offices as messy and inconvenient. After a number of earlier fruitless attempts to improve this system, it was decided that a new approach was needed. Using TRIZ, we analysed the milk foaming process and rapidly identified a novel way to eliminate the steam wand yet still froth the milk. The new patented method completely avoided any contact between the machine and the milk, eliminating the need to frequent cleaning. This innovation formed the basis of a new drinks system which today delivers incremental sales of more than \$20m per year.



### Case Study 2:

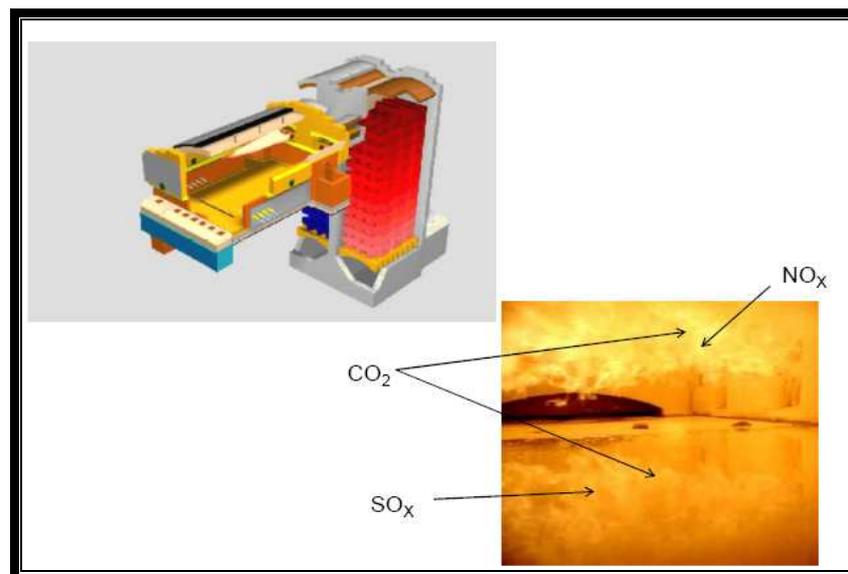
**Problem:** how to prevent jamming in a medical device?



**Action and Outcome:** a company developing medical devices had a big problem – the new device they were designing suffered from a serious jamming problem. The issue was so troublesome that, after two years of unsuccessful problem solving attempts and large amounts of development budget wasted, the company was considering abandoning the project altogether. Before deciding to stop the project, they asked CoCatalyst to take another stab at the challenge. We applied TRIZ and identified a number of solutions. One solution was selected and implemented. It totally eliminated the risk of jamming. The product is now proceeding through final approvals before being launched on the market.

### Case Study 3:

**Problem:** how to reduce harmful emissions from a glass making process?





**Action and Outcome:** The world's largest glass container manufacturer was deeply concerned that a proposed "cap and trade" tax would wipe out all their profit. Conventional glass melting involves the burning of fossil fuels above a mass of batch material at high temperatures (over 1500°C). The energy needed to melt glass accounts for over 75% of the total fossil fuel energy requirements in glass production and this process generates harmful emissions of CO<sub>2</sub>, SO<sub>x</sub>, and NO<sub>x</sub>. Scientists at the company had investigated many options without success. Senior managers at the company realised that a fresh approach was needed and asked us to help. Using TRIZ we identified two solutions that completely eliminate CO<sub>2</sub> and NO<sub>x</sub> emissions, and reduce energy consumption by ~60%. One solution has already proved successful under validation trials. We proposed two further, slightly less radical solutions that reduce SO<sub>x</sub> emissions by ~70%. All the solutions reside outside the scope of the company's internal subject matter expertise. All the solutions are highly actionable – they are already used in other areas of technology, and just require adaptation.

## About CoCatalyst

CoCatalyst is recognised as a World Leader in Inventive Problem Solving. John Cooke founded CoCatalyst in 2008 after more than 20 years experience working for Mars Inc. in a number of high profile Innovation Management roles. John has 14 years hands-on experience of TRIZ application and training. He has published a number of TRIZ papers and has authored over 50 international patents. The mission of CoCatalyst is to be the First Choice TRIZ services provider.

CoCatalyst provides TRIZ based Open Innovation; using TRIZ to analyse the client's initial situation , identifying strong solution directions and then targeting, selecting and connecting with breakthrough technology partners from parallel industries. CoCatalyst currently has clients in the Energy, Food, Packaging, Automotive and Medical sectors. CoCatalyst works in partnership with The TRIZ Group, LLC, based in Detroit, USA.

Our services:

### Problem Solving

- Analysis and resolution of issues with an existing process or system
- Proof-of-concept

### Identification and Development of Next Generation Breakthroughs

- Analysis of evolutionary status of current systems and processes, identification of key system conflicts, prediction of strong concept directions
- Development of Breakthrough concepts

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- Proof-of-concept

### **Building In-House Expertise**

- Combined training and hands-on problem solving workshops

## **What makes us different?**

We offer...

1. A proven methodology which guarantees that, if a strong solution exists, we will find it
2. Access to a large pool of the best subject matter experts to help us turn concept solutions into reality
3. A process founded on active participation by the client to ensure that the solutions we develop are the ones that deliver for you