

Теория решения изобретательских задач

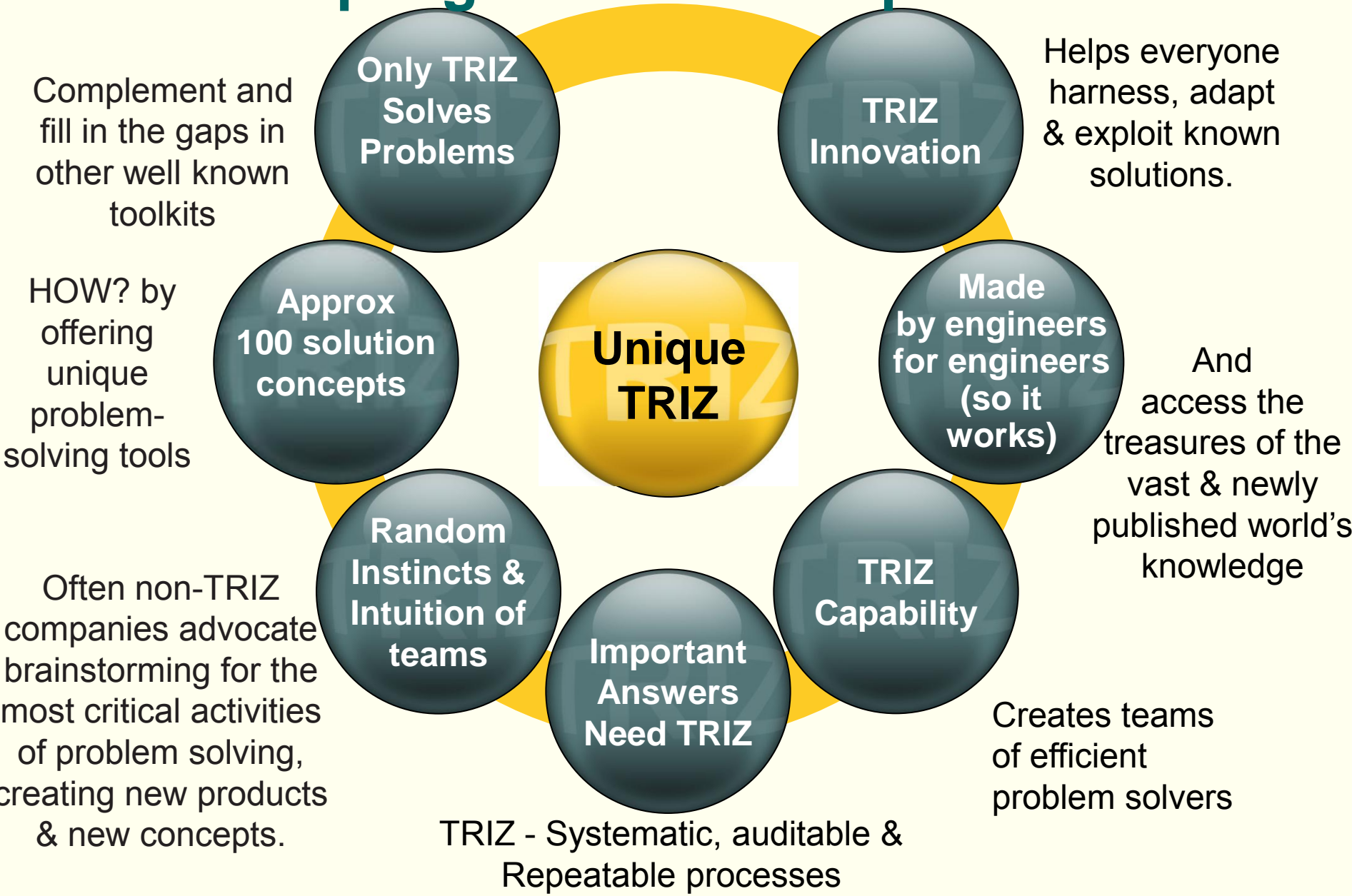
TRIZ

Teoriya Resheniya Izobretatelskikh Zadatch

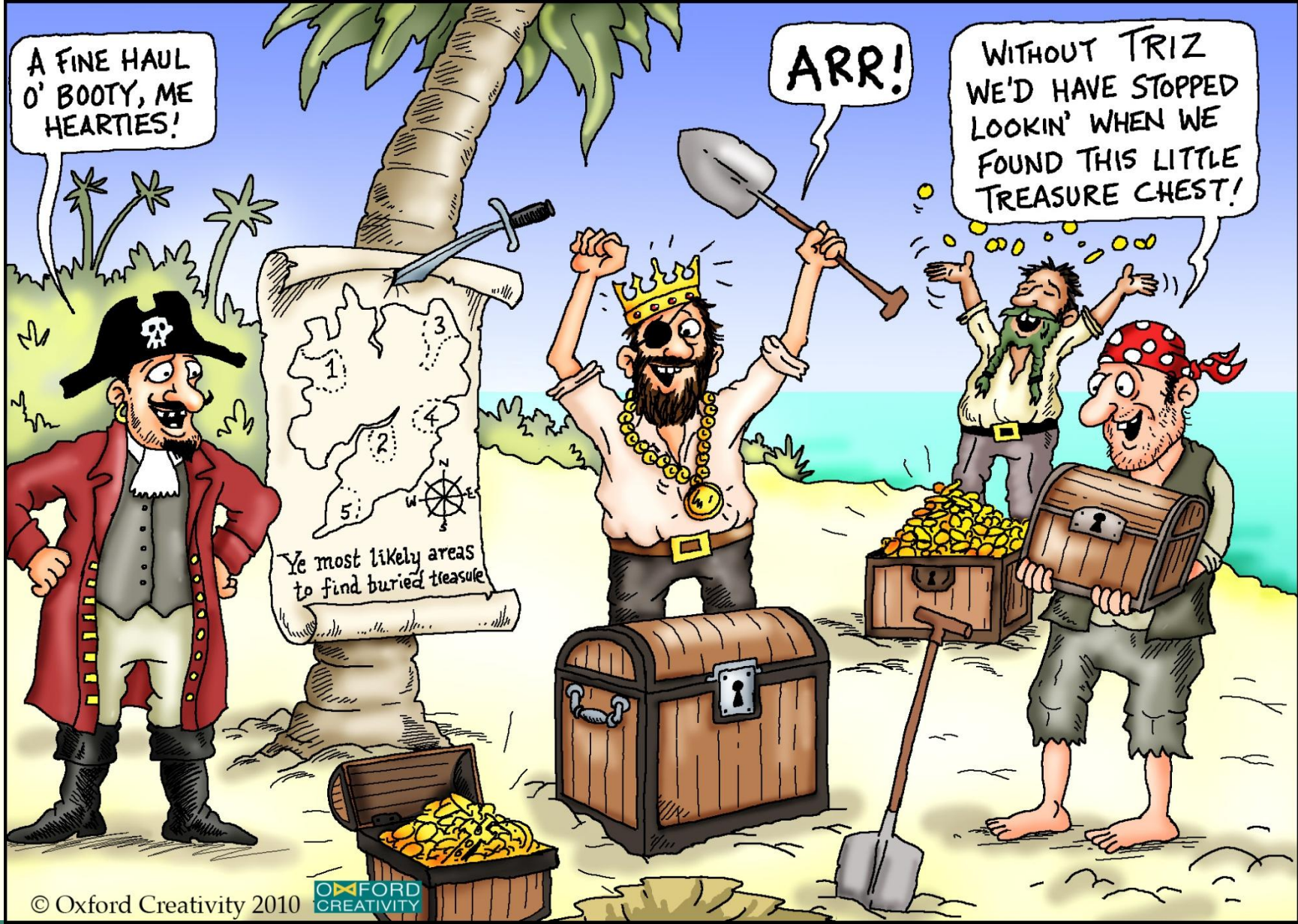


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TRIZ simple golden rules & processes



TRIZ Companies find More Solutions....




A FINE HAUL O' BOOTY, ME HEARTIES!

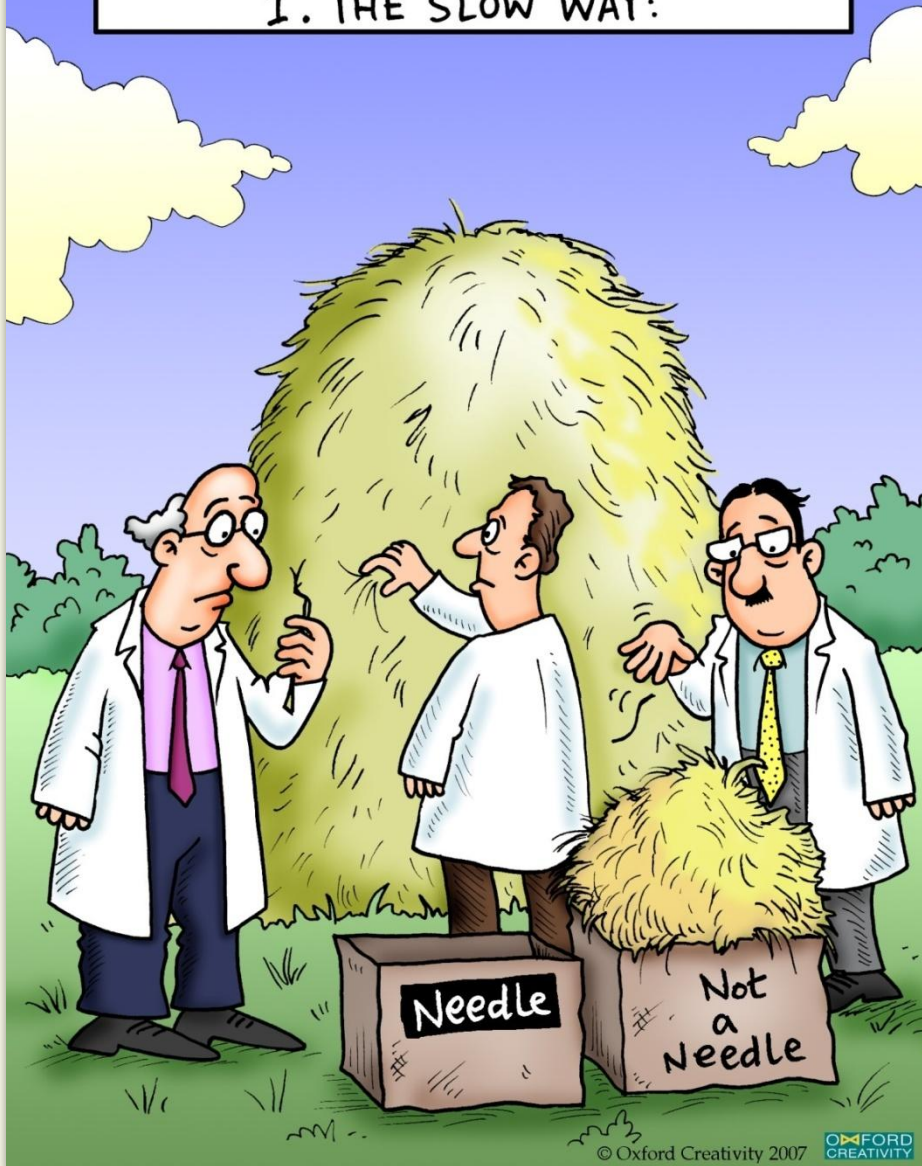
ARR!

WITHOUT TRIZ WE'D HAVE STOPPED LOOKIN' WHEN WE FOUND THIS LITTLE TREASURE CHEST!

Ye most likely areas to find buried treasure

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FINDING A NEEDLE IN A HAYSTACK
1. THE SLOW WAY:



What do non TRIZ companies do when they hit difficult and challenging problems?

Sift through vast amounts of information?

2. THE FAST WAY



TRIZ Companies find...
 Fast access to TRIZ
 solutions & relevant
 knowledge for effective
 systematic rapid
 problem solving

Is TRIZ hard to learn & apply?

NO! Not if you understand its logic.....



**TRIZ is a capability - rigorous – straightforward – logical
with about 100 Golden rules**

Look for Golden Rules

Simple and logical



TRIZ Golden Rules

**Always
Improve
Ideality**

**Mobilise
Resources**

**Solve
Contradictions**

TRIZ Golden Rules

- distillation of the world's knowledge ...

TRIZ has all recorded solutions distilled into 4 simple lists

40

Inventive Principles

for Solving Contradictions

8

Trends of Technical Evolution

for New & Future Products

76

Standard Solutions

24 for Harms
35 for Insufficiency
17- for detection & measurement

2,500 (?)

Effects
The right questions with the answers for HOW TO? Questions

TRIZ = systematic ways for defining and understanding problems and then using the lists above to solve them



All systems
have
predictable
Evolution

Become More Flexible - new phones from Samsung (big TRIZ user)

**SAMSUNG**

IS THERE A PROBLEM-SOLVING VEHICLE WHICH SUITS OUR COMPANY?



WE NEED NEW CONCEPTS

WE'RE STUCK!

WE NEED SOME BREAKTHROUGHS

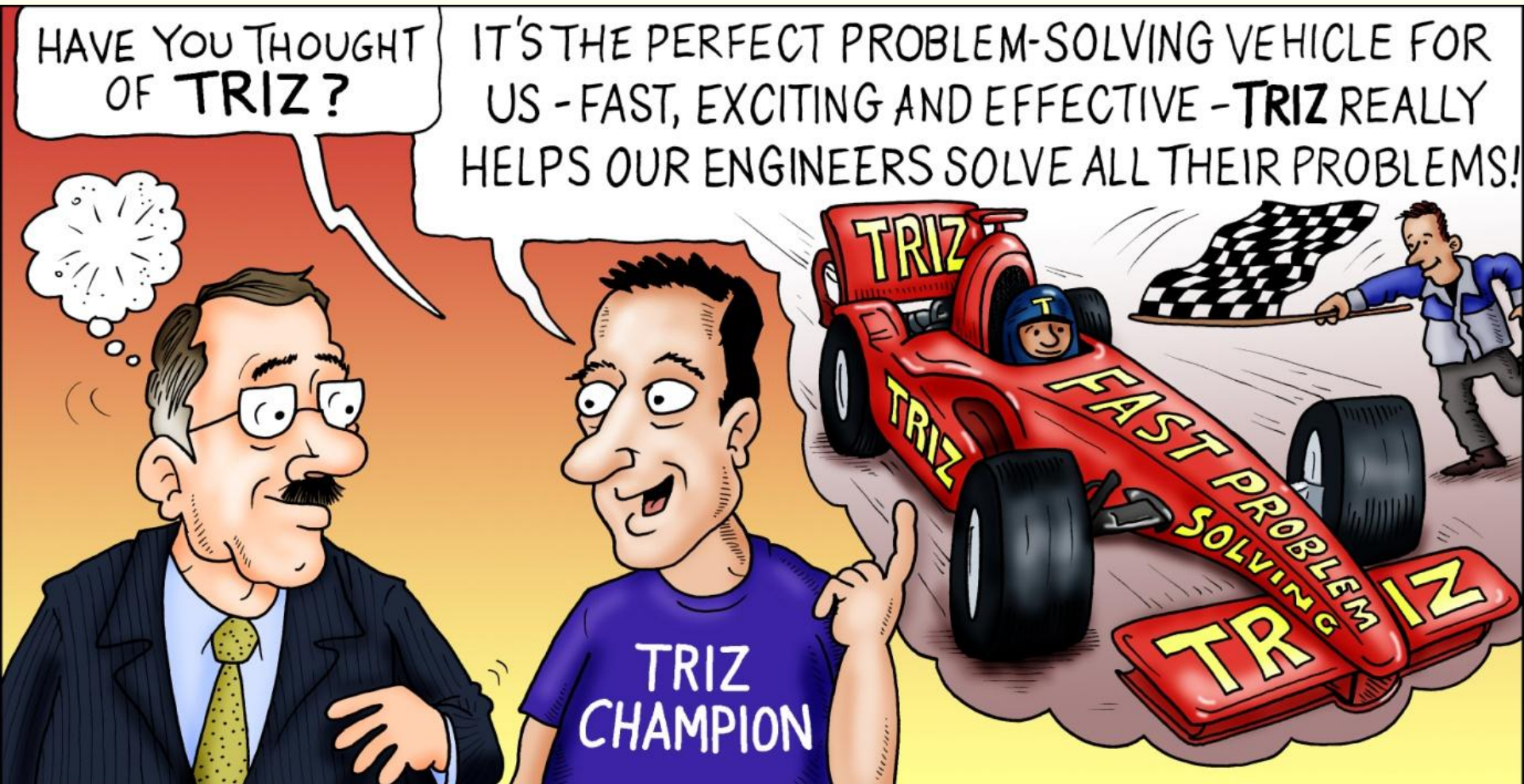
WHAT DO WE NEED FOR INNOVATION?

WE NEED NEW PRODUCTS

WHAT HAVE WE GOT? RESOURCES AND PROCESSES TO DEAL WITH ANY SITUATION?



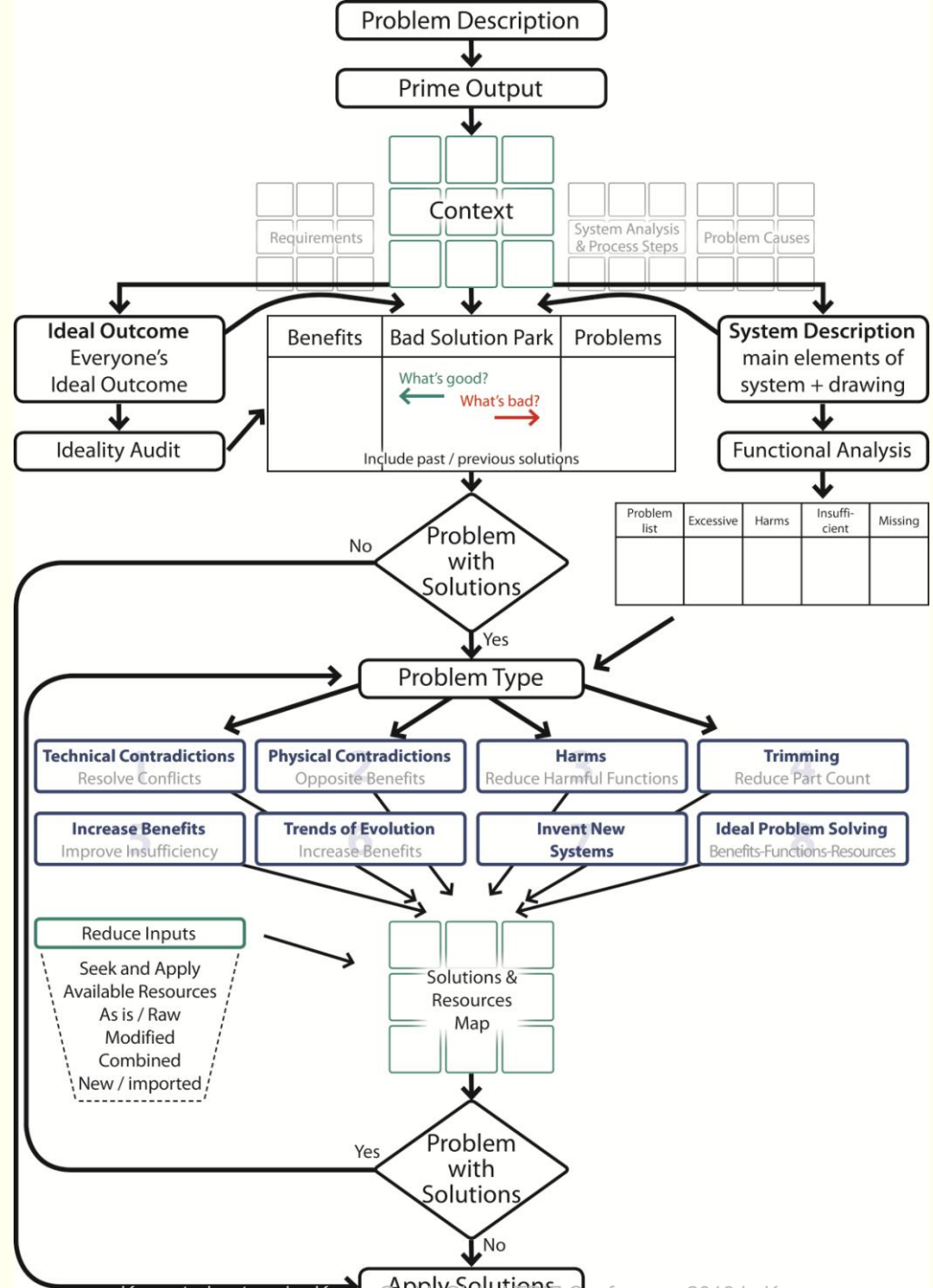
TRIZ not as well known as it should be with its unique Russian origins



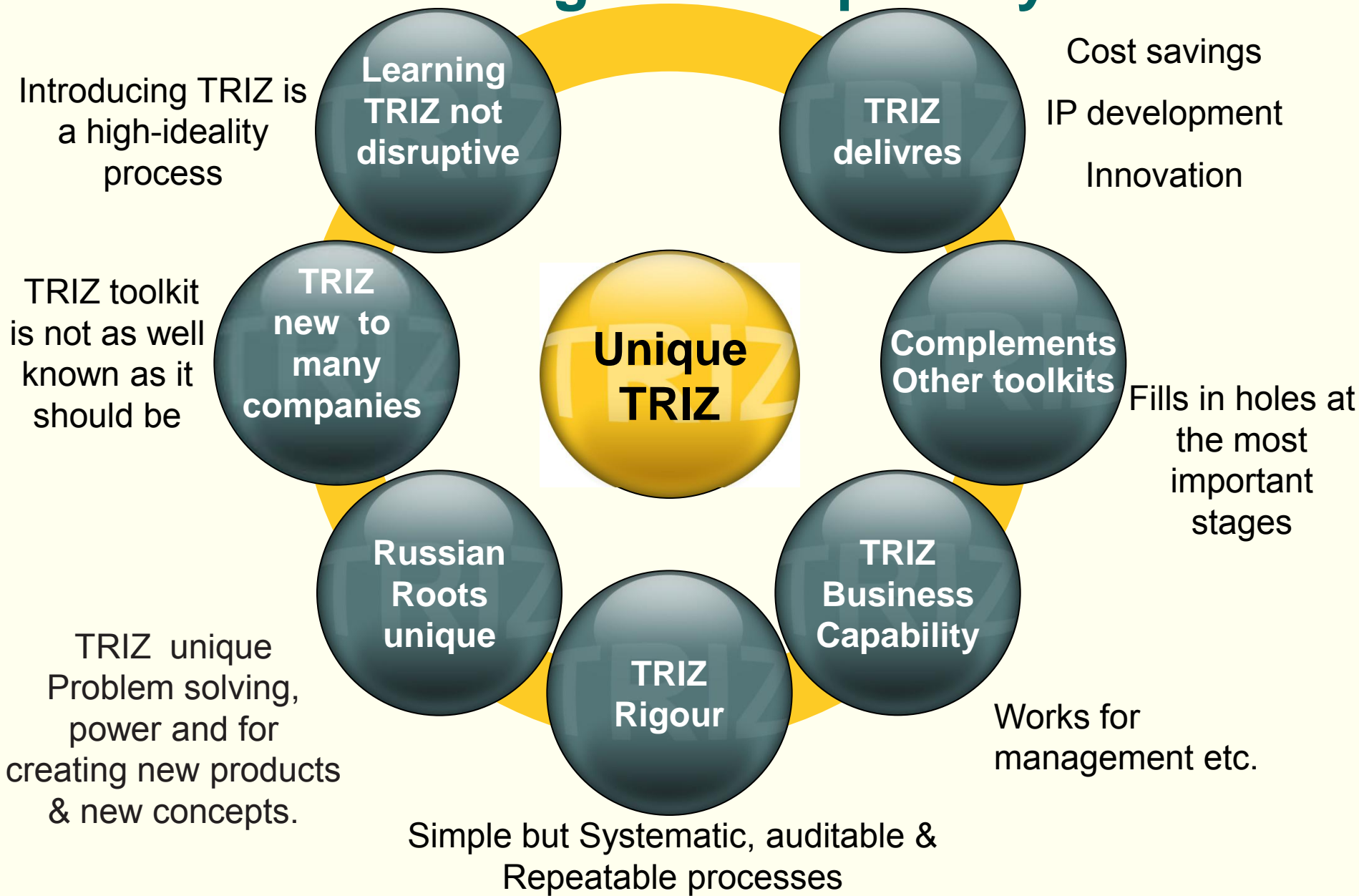
Creativity vs Systematic??

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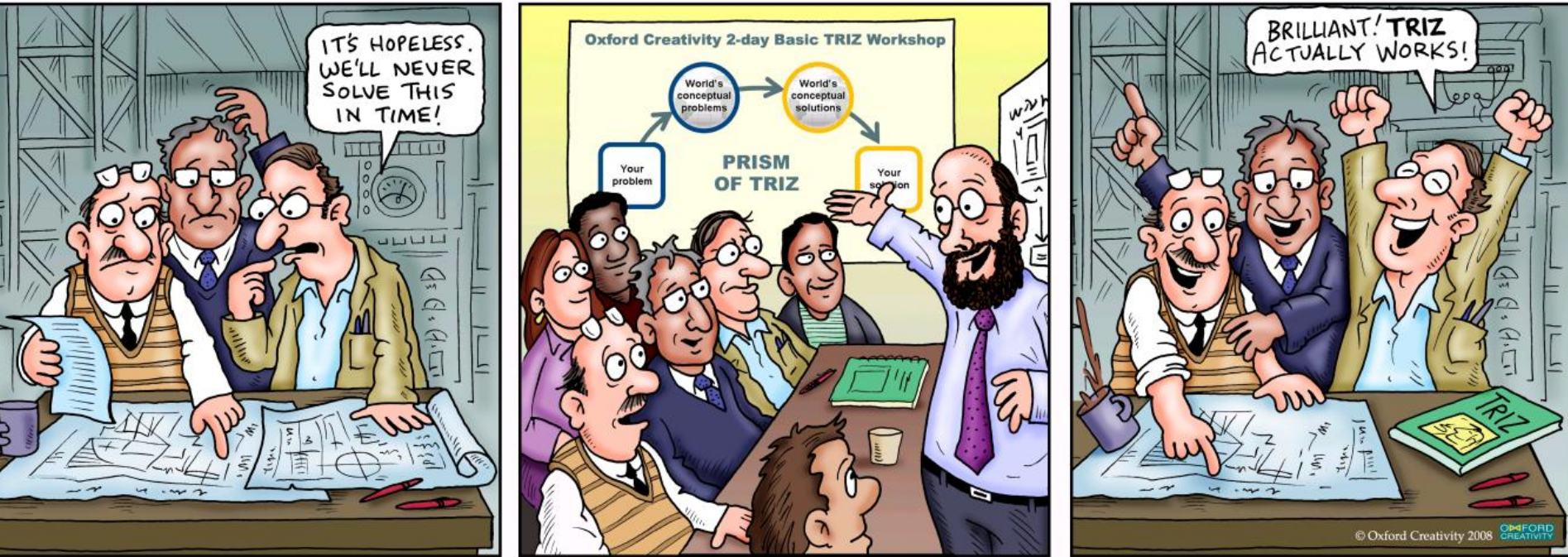




Achieving TRIZ Capability



TRIZ has a successful track record in both engineering AND business



TRIZ followed the inevitable migration from engineering to management of many toolkits but because of its logic and power the TRIZ transition has been very successful.

CAN SOMEONE PLEASE EXPLAIN
TO ME THE EXPRESSION:
'THE ELEPHANT IN THE ROOM'?







BAD Solution Parks

Essential first step in problem Solving



Ideality Requirements

Everyone's Benefits
& acceptable
costs & harms
(constraints)

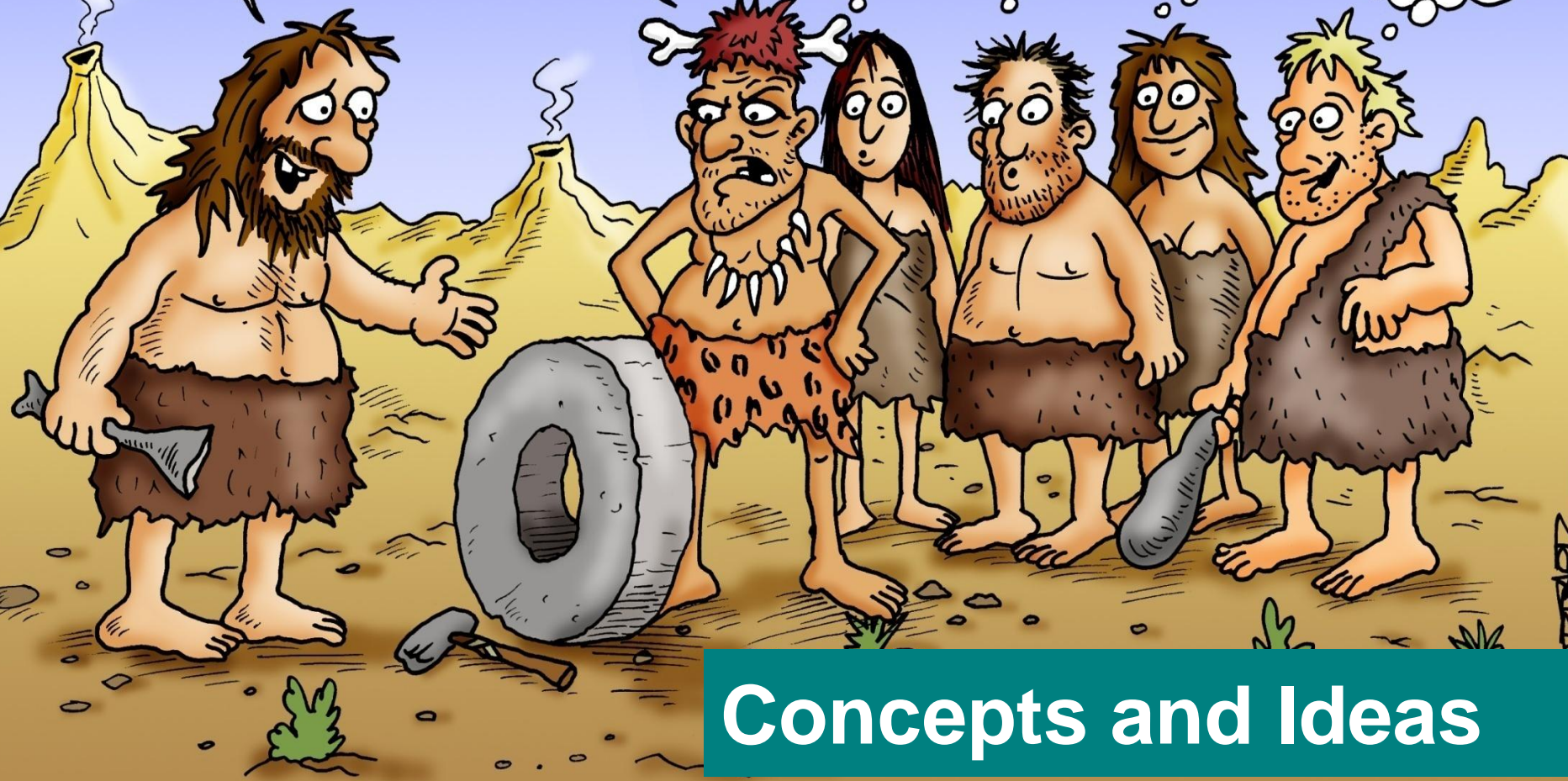
Bad Solution Park

Current System

functions features
& resources

LOOK WHAT I'VE
INVENTED!

WHAT
USE
IS IT?



Concepts and Ideas

TRIZ for Sustainability

GO BACK!



“He says there’s no scientific basis for global warming.”





COME ON YOU THREE!

TRIZ TEAM	0
DIFFICULT PROBLEMS	0

HE THINKS HE ONLY NEEDS US THREE! DOESN'T HE REALISE THE TALENT HE'S GOT ON THE BENCH?

TRIZ – play the whole team



IDEAL SYSTEM

Visualising the Ideal
helps us understand

BOTH

What you want
&
How to get it





Innovation
 TRIZ
 uses
 old
 good
 ideas
 in
 new
 ways



TRIZ AND other toolkits for problem understanding



Non TRIZ toolkits offer random processes for problem solving



Only TRIZ – unique processes & concepts for problem solving

LET'S USE TRIZ TO UNDERSTAND THE PROBLEM SITUATION

HAVE WE GOT A PROBLEM LIST?

YES

LET'S USE TRIZ TO CAPTURE EVERYTHING WE WANT

LET'S USE TRIZ TO MAP THE SYSTEM

NOW LET'S USE TRIZ TO SYSTEMATICALLY SOLVE THE PROBLEMS!



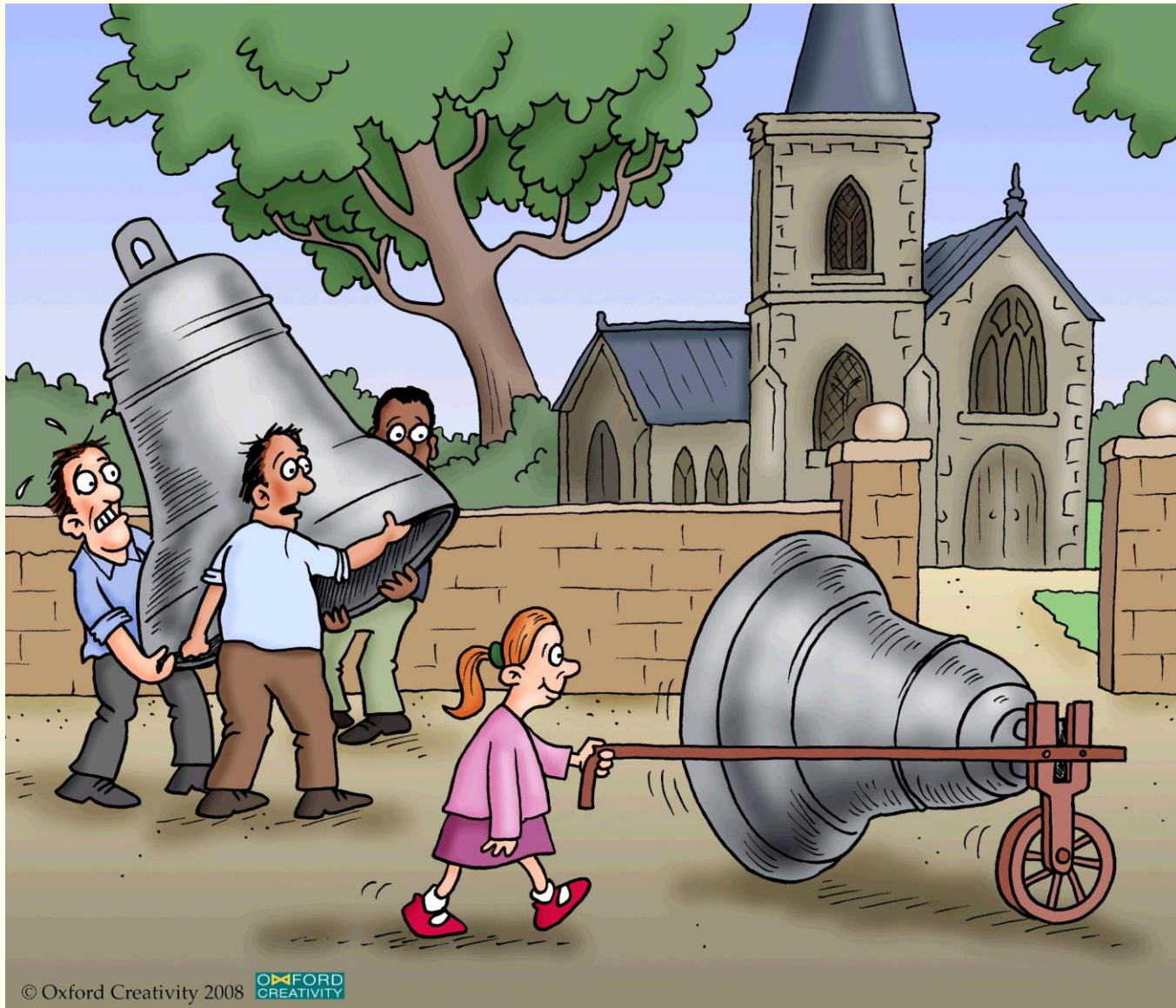
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PROBLEM SOLVING ROOM 2: GREAT NUMBER OF SOLUTIONS PRODUCED

Using Resources

Get what we want
by using
What we have

Resources are key!!

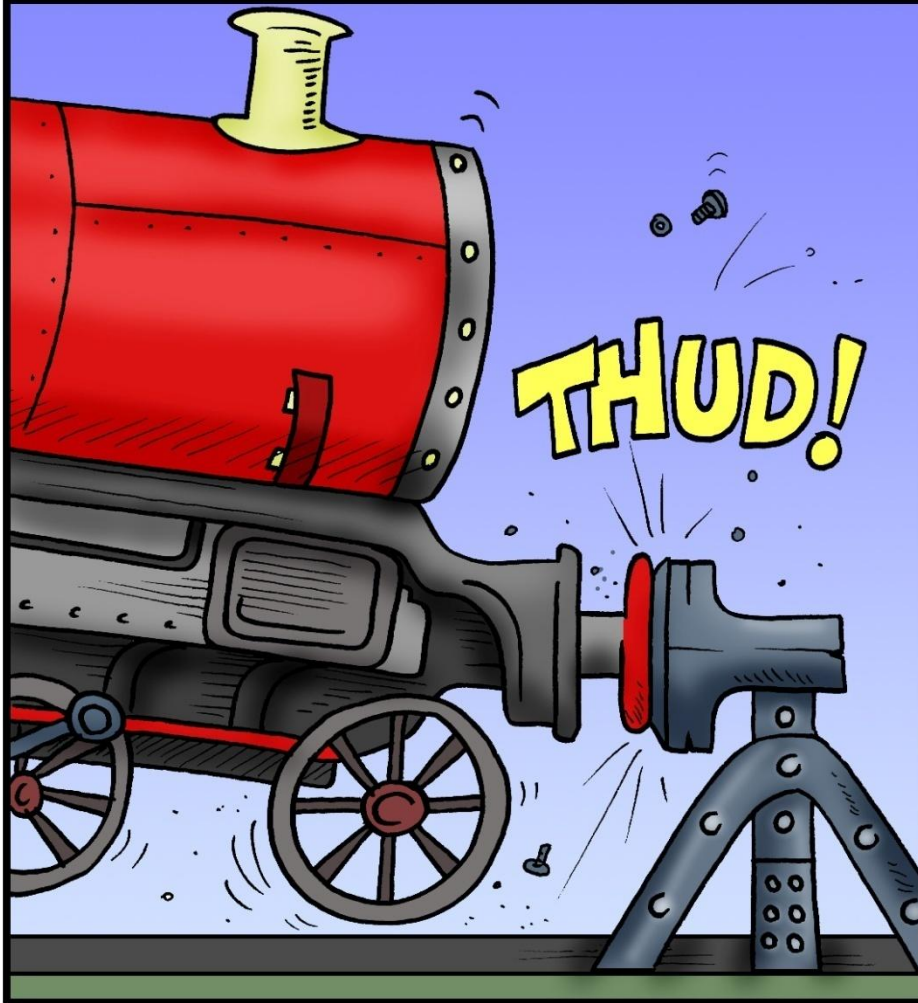


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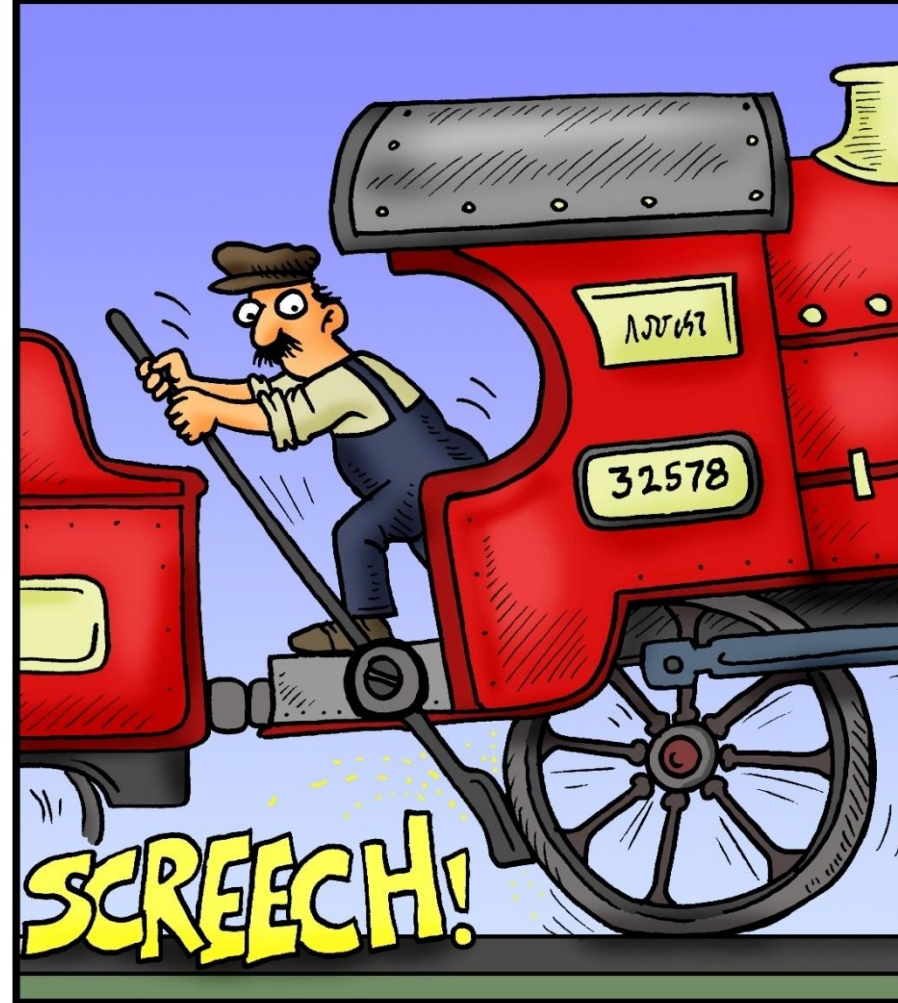


HOW TO STOP A TRAIN:

① USE BUFFERS



② APPLY A BRAKE



③ PUT STATION ON A HILL

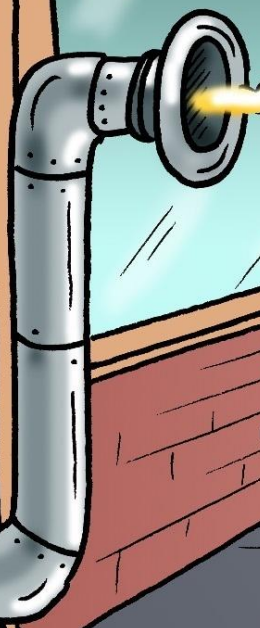


BAKERY

GREEN & SONS



FRESH BREAD AROMA



Resources

Hesco Bastion



Iraqi army engineers fill four foot Hesco bastions with their bucket loader

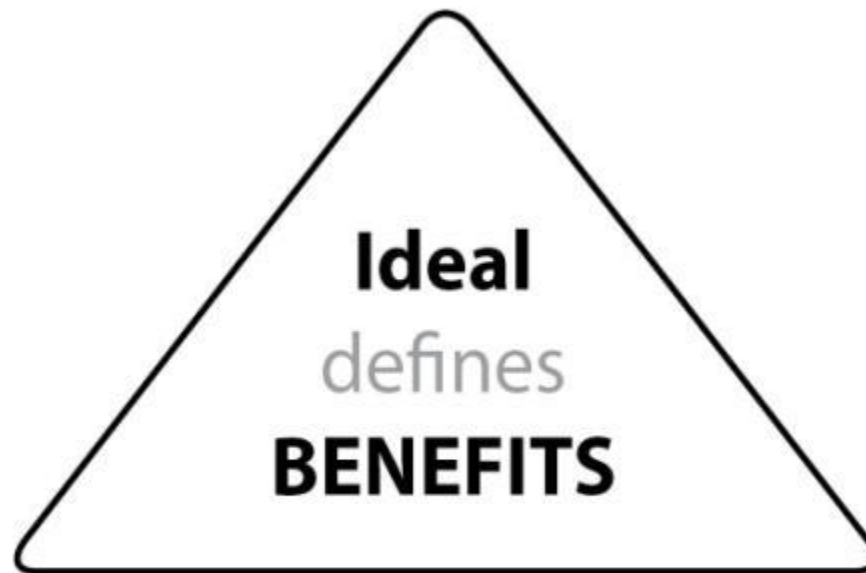


Sailors assembling HESCO bastions

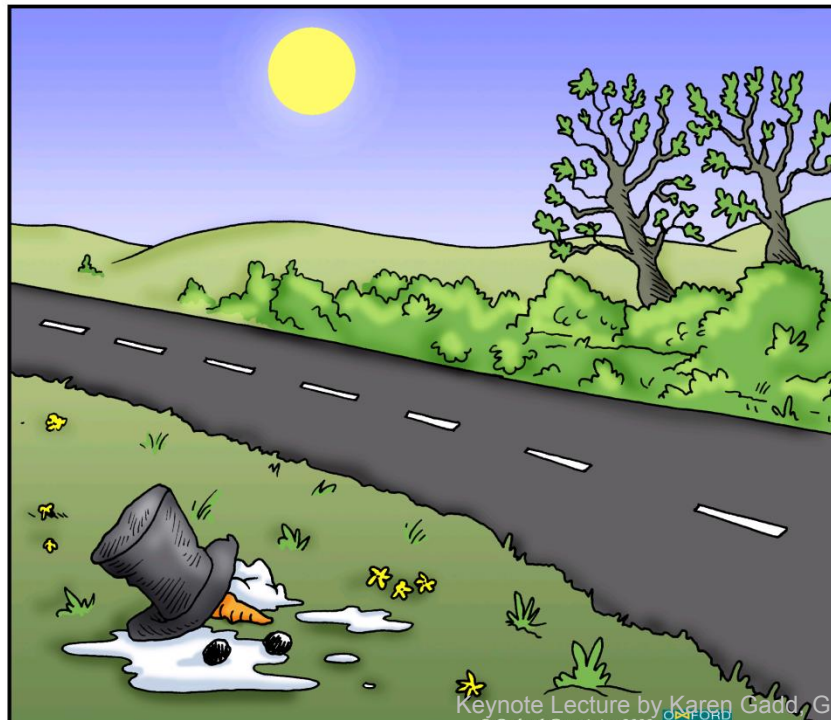
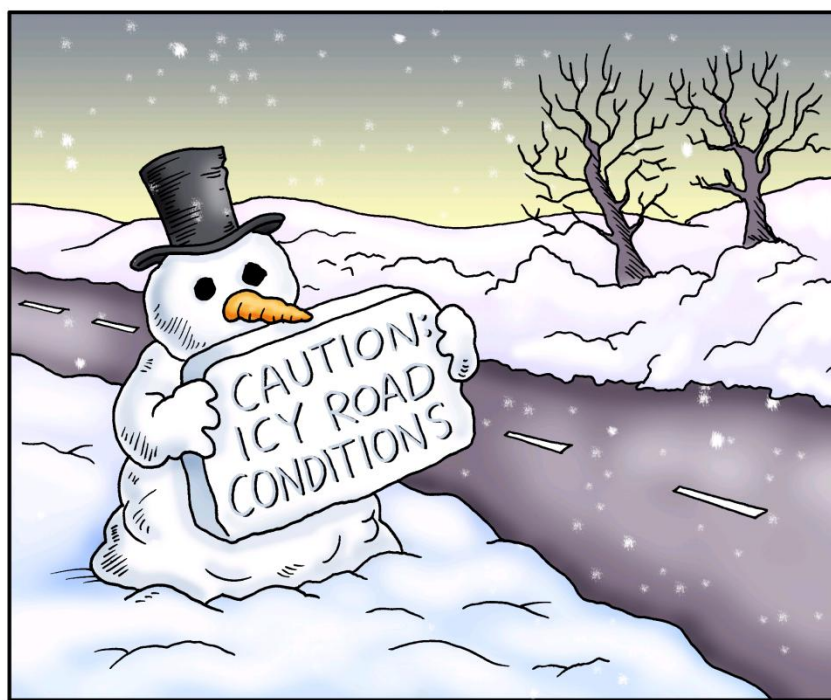


THAT SHOULD GIVE THE
MESSY DEVILS SOMETHING
TO AIM AT!









TRIM out road
signs?

Replace with

Clever use

of available

Resources



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Teoriya Resheniya Izobretatelskikh Zadatch

What does TRIZ deliver?



Next Generation Products from unique TRIZ tools

8 Trends of Technical Evolution

Patterns which map the likely development of all successful products & activate their success DNA

TRIZ Effects
= How to ?????? from the World's Knowledge
Powerful & simple TRIZ database of all existing answers to challenging questions

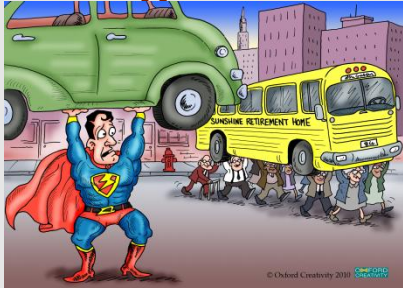
Time & Scale Context to reach Ideal Systems
Time & Scale context of benefits – plot all routes to the **Ideal System**

Function mapping & Trimming
Simplifying from current system to systematically develop & /or invent new, better and cheaper system & products



Work well as happy, creative & productive teams

Teams not Heroes Sharing Bad Solutions

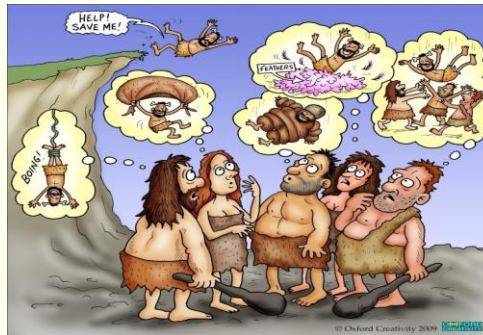


Activate energy and everyone's ability to add & contribute to answers



Everyone joins in and is active throughout – finds everyone's potential

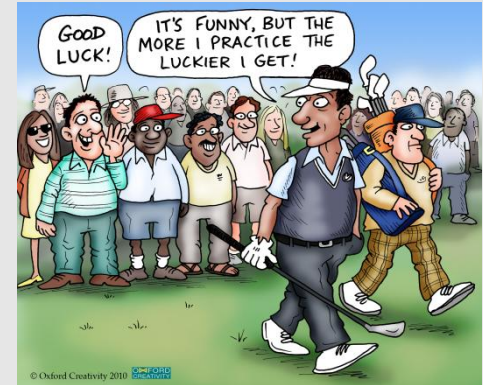
Ideality inputs & outputs
Agree aims & answers
TRIZ helps us define all aims and outcomes we want. – we then all understand, share & combine our many answers



Good solutions trump management conceit



Timetabled TRIZ



Discipline, structure and systematic TRIZ maximises valuable problem solving time & says **YES** not **NO**



Innovation - individual, teams and organisations

TRIZ & Invent



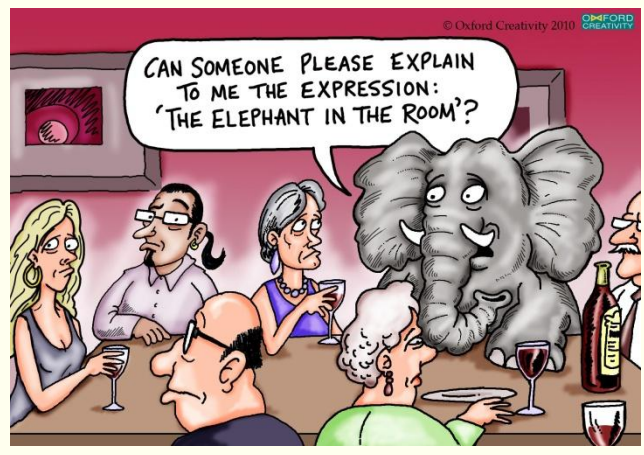
Good inventions and innovations often use old solutions in new ways – TRIZ makes this second nature



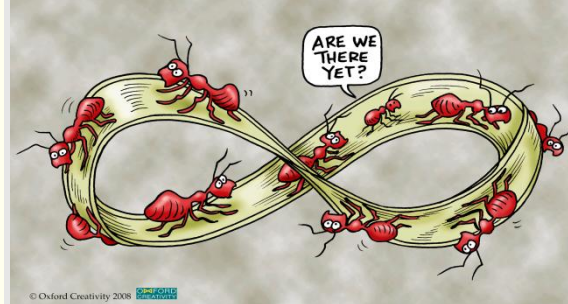
Break old, set habits & stimulate new thinking
See what's wrong, unchanged and stale – seek new ways



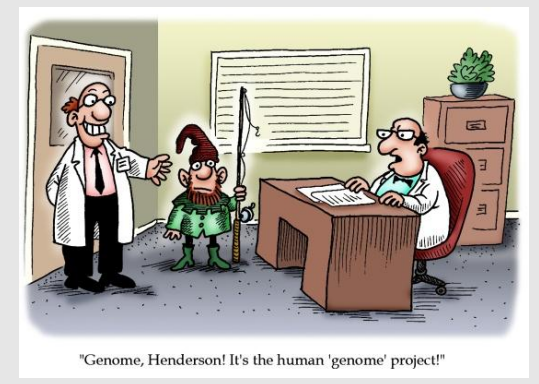
Think differently confront fears and constraints – seek the Ideal



Time & Scale for context & direction
Avoid dead ends, time wasting & mistakes

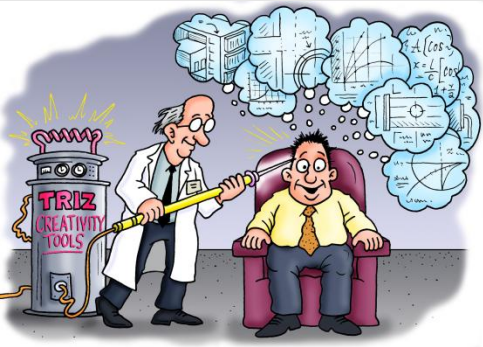


Moving onwards and upwards – in the right direction to good goals



A life-long ability to think more clearly

Provoke Ideas



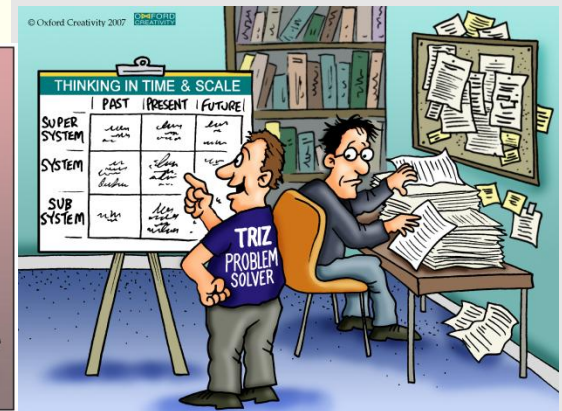
TRIZ offers 100 or solutions triggers plus creativity tools which shake your brain into action

Guaranteed Solutions

TRIZ Solution Triggers provoke new ideas from our brains and move us away from idea inertia See & embrace contradictions



Time & Scale for context & direction Confront, zoom in/out, innovate, systematically



Break Psychological Inertia Try new things in new places

Ideals- to see what we REALLY want



Practical solutions to difficult Problems

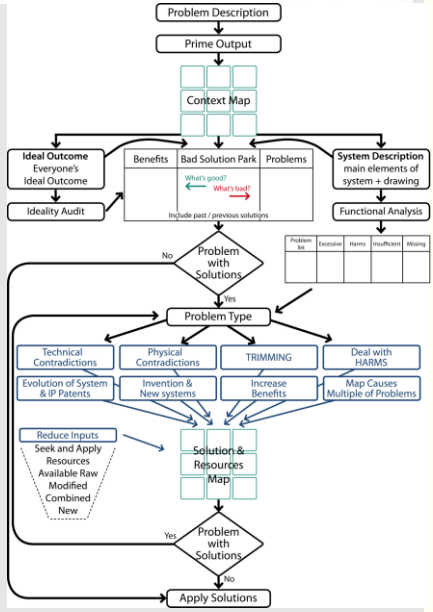
Problem Solving Maps



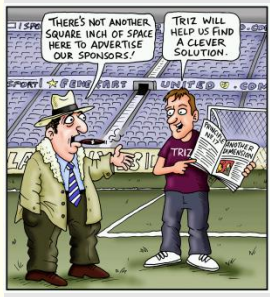
Mobilise resources
TRIZ philosophy uses resources in problem

100 Solutions in the World's Knowledge
40 Inventive principles
8 Trends of Evolution
35 ways for Insufficiency
24 strategies for HARMs plus TRIZ Effects

The right and clear algorithms for different Problem types & situations



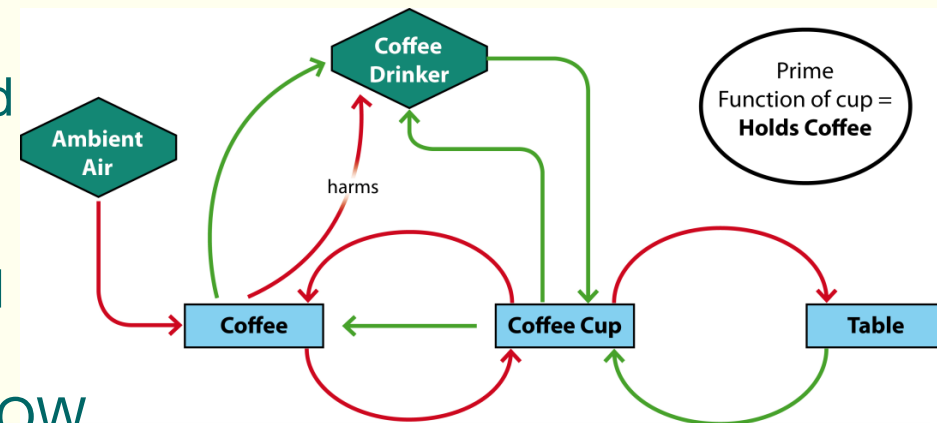
Simple solution triggers to help overcome hard problems



Elegant Solutions, cost savings, with auditable clear routes to success

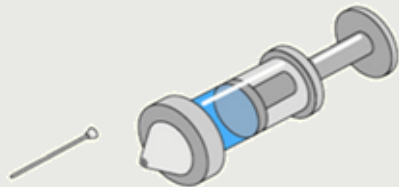
Function Analysis to map the system then Trimming

This gives a clear picture of a system at any point in time and all its problems and insufficiencies. TRIZ then offers clear auditable routes to improve, cut costs & find a more ideal system. TRIZ Standard Solutions guide us to all possible, real solutions – TRIZ Effects then show us HOW



Development & simplification (Trimming) of Medical Syringe

Glass Syringe



Complex System

Plastic Syringe



Partially Trimmed

Tube Syringe



Further Trimming

Needle Syringe



Deep Trimming