



Boosting Professional Creativity

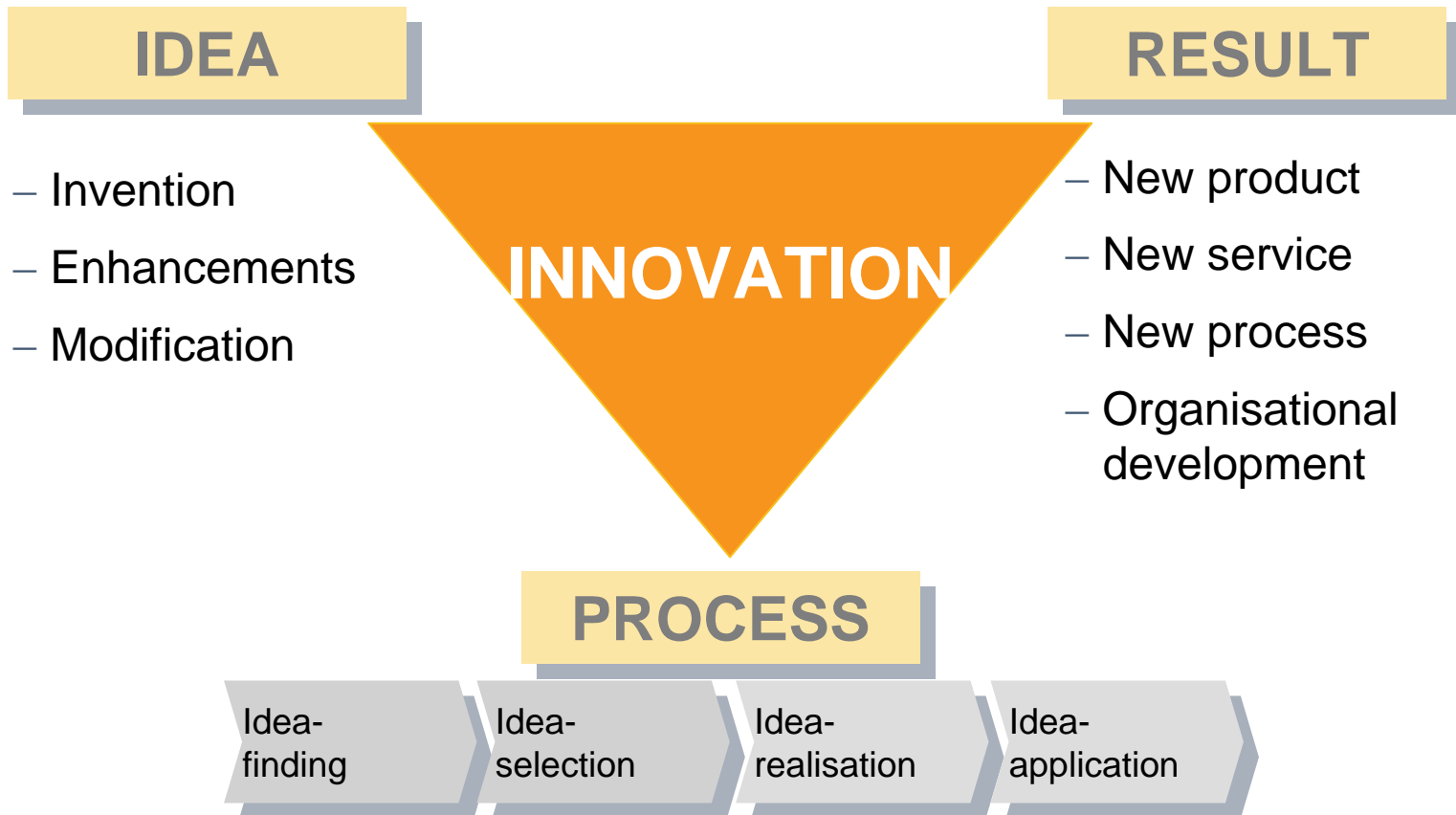
Enhancing
Problem Solving Competence

DI Stefan Posch

14.11.2008

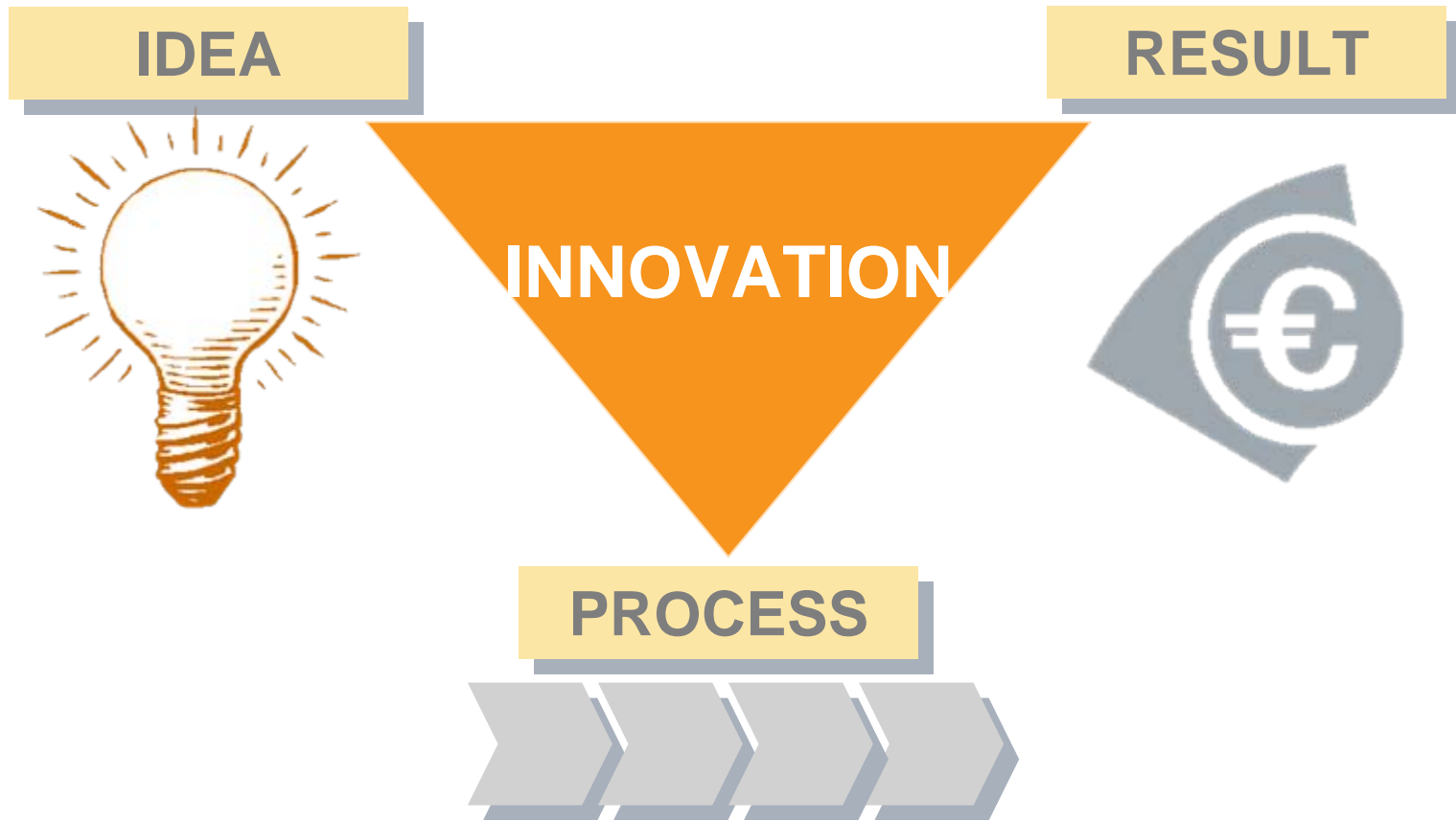


Dimensions of innovation





Dimensions of innovation





What is creativity ?



- Psychologist J. P. Guilford describes creativity as thinking divergently and being free of “functional fixedness.”
- H. H. Fox (scientist) – “Any thinking process in which original patterns are formed and expressed.”
- Csikszentmihalyi & Wolfe, 2000 -- “Creativity can be defined as an idea or product that is original, valued, and implemented.”
- Frank Barron -- “Creativity is an ability to respond adaptively to the needs for new approaches and new products. It is essentially the ability to bring something new into existence purposefully, though the process may have unconscious, or subliminally conscious, as well as fully conscious components.



The creative personality

(Perkins, 1988; Csikszentmihalyi, 1997)



risk-taking

self-esteem

assertiveness

playful - disciplined

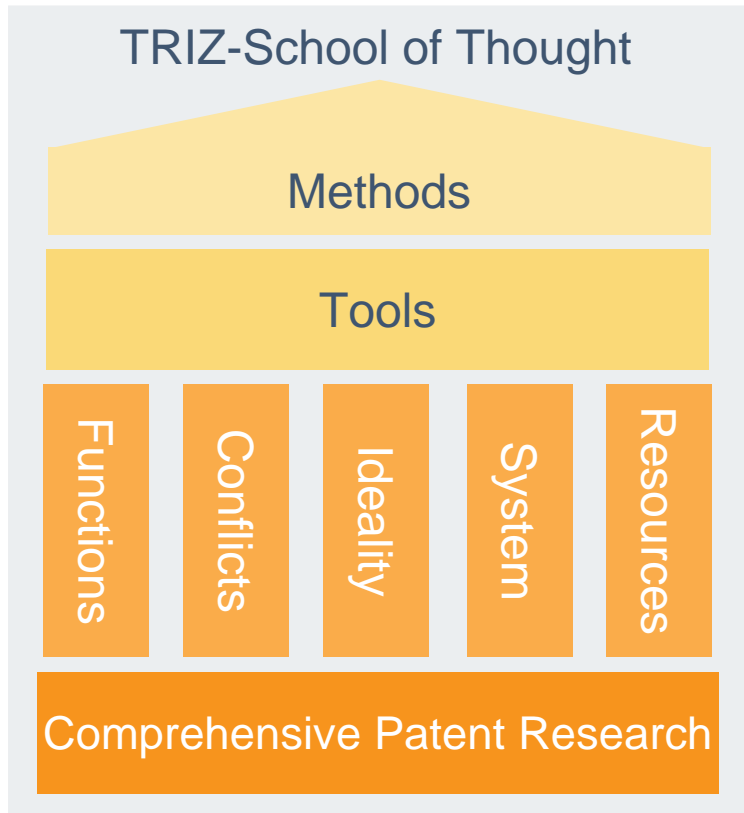
dreamful - down to earth

rebellious - conservative

Source: Neurovation research project, Neubauer, Bendek , 2005



TRIZ - Theory of Inventive Problem Solving



- 1946 Hypothesis: „Creativity can be learned“ and starts a patent analysis
- Sentenced by Stalin to 26 years penal camp (Siberia)
- Used the time in the penal camp to further develop his theory
- 1953 released from penal camp
- Beginning of the nineties: Migration to the US

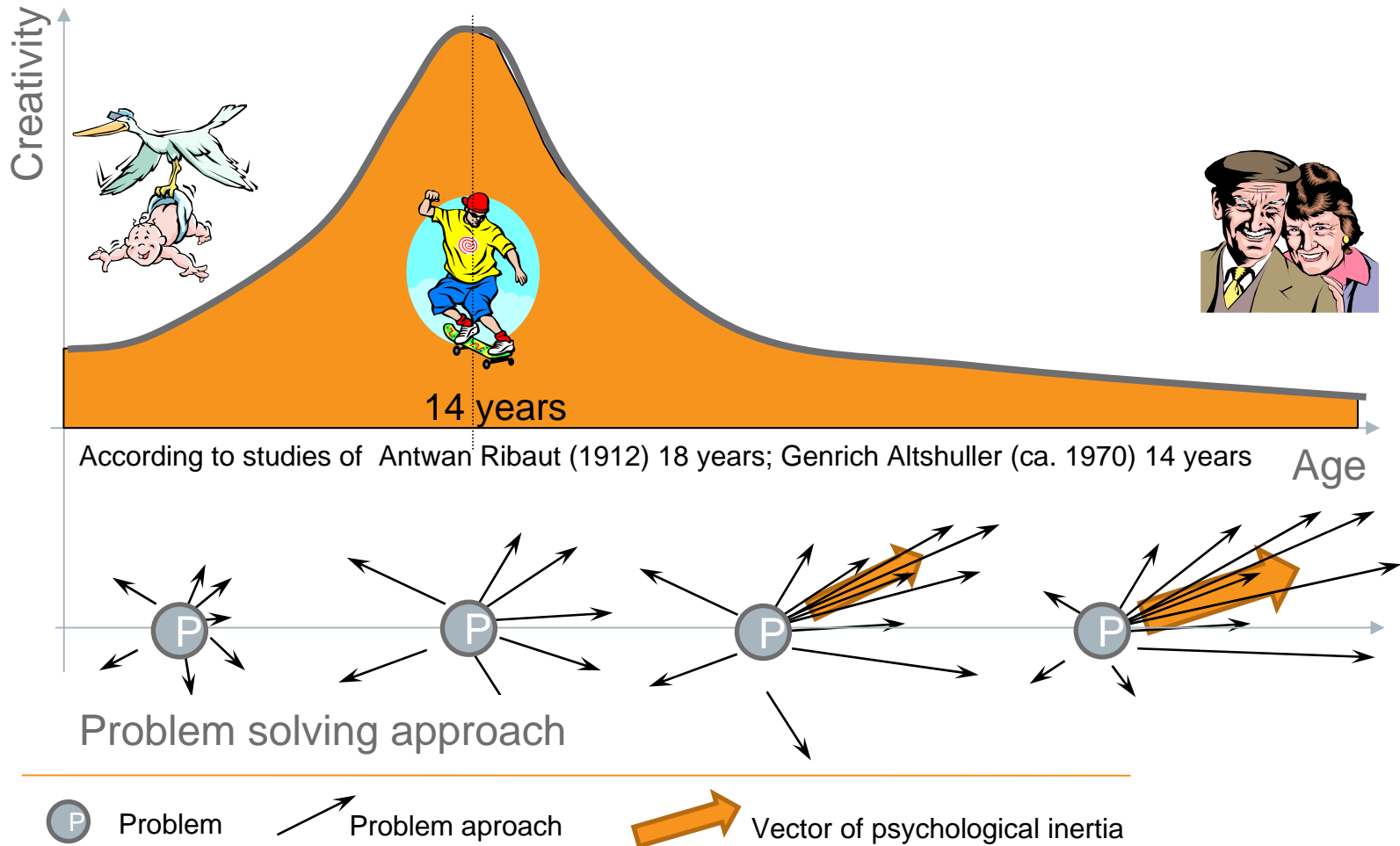


Dr. Genrikh
S. Altshuller

Founder
1926 - 1998

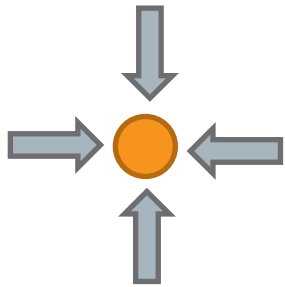


Creativity, age and psychological inertia

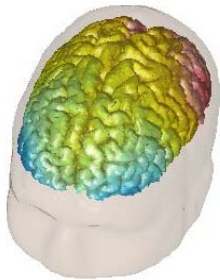




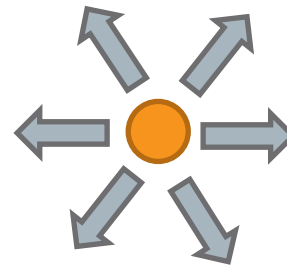
Convergent and divergent thinking



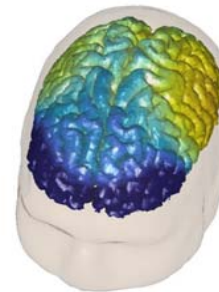
Convergent thinking
logic-analytic
cognitive skills
proven solutions
rule-oriented
efficiency



Brain activation
more left hemispherical
high; focused



Divergent thinking
intuitive-explorative
associative skills
playful-novel
unbiased
chance-risk

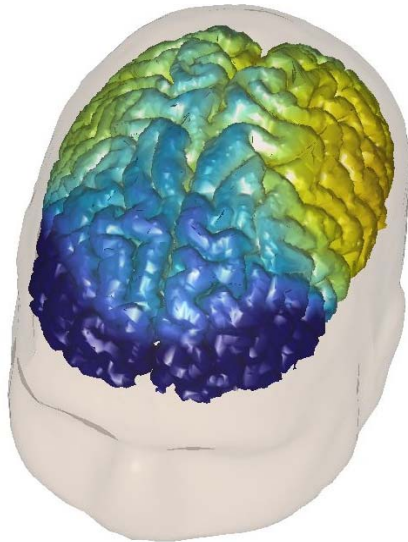


Brain activation
more coherence
low; distributed



Low-Arousal-Hypothesis

(Martindale, 1999)

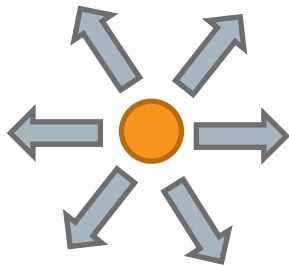


Creative thinking requires low, uniform activation of multiple brain areas.

By that distant cortical associations can be discovered and far apart elements can be connected.

Creative persons show

- Lowest cortical activation during creativity tasks, but not during intelligence tasks.
- Little cortical activation during inspiration phases but not during elaboration phase.
- ...and only when they are asked to behave creatively.



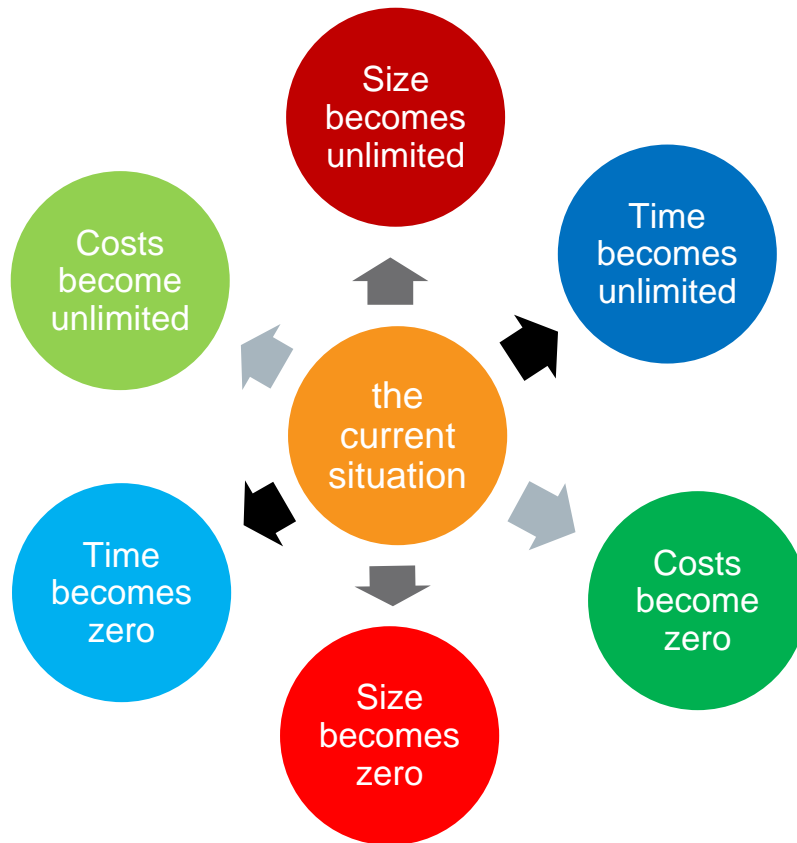
Divergent Thinking

strong increase of Alpha-Power (TRS) in frontal cortex area





A simple creativity training program



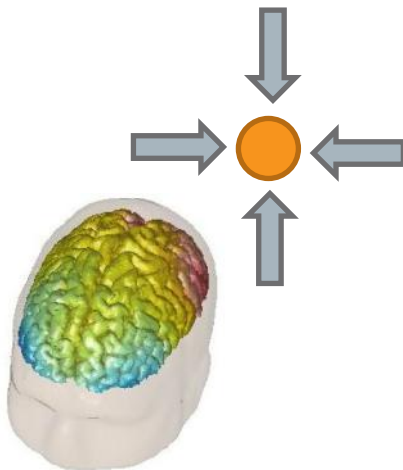
- Whenever you want to train your divergent thinking ask yourself the following six questions and collect as many ideas as possible
- Phrase the questions like: „What happens if I change the current situation/object/solution such that size/time/cost becomes zero / unlimited



Creativity in phases

1

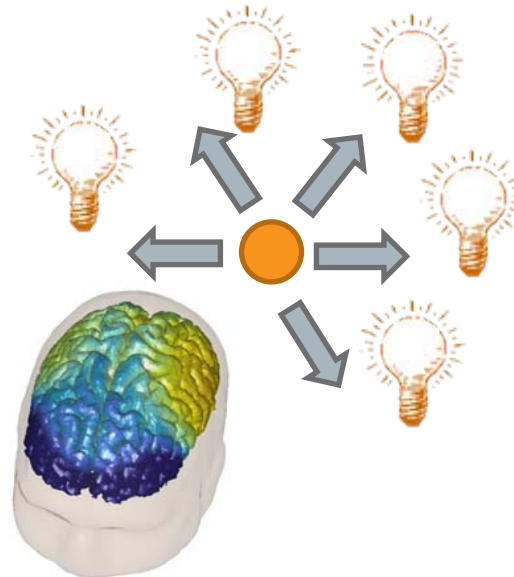
data-finding
problem-finding



Convergent
thinking

2

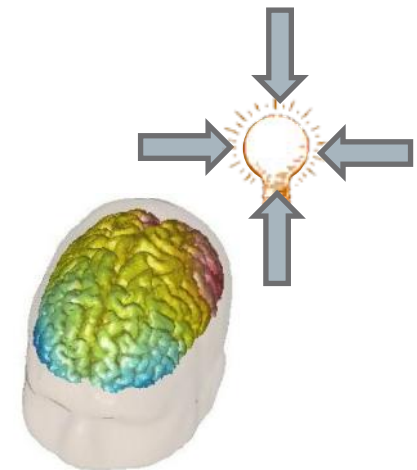
idea-finding



Divergent
thinking

3

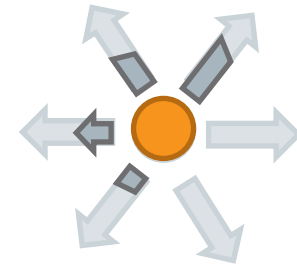
solution-finding



Convergent
thinking



Creativity in teams



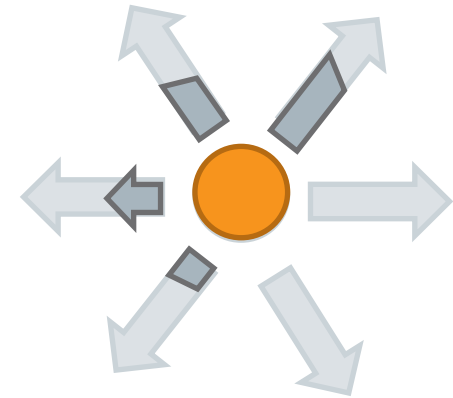
Criticism kills
divergent
thinking in teams



The top 10 killer phrases

- „That is not your responsibility!"
- „It works anyway the way it is today!"
- „We always did it that way!"
- „We will later come back to that!"
- „We have tried that before!"
- „Good idea, but no for us!"
- „Imagine all the paper work!"
- „You are too young!"
- „No!"
- „That will never work!"

Never allow them in phase





What can we learn from that

- Understand that your Brain works in two thinking modes

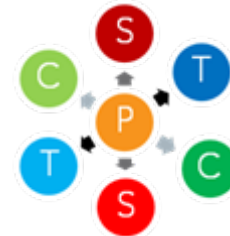


Convergent - logical - vertical



Divergent – lateral – “cool” frontal cortex

- Train divergent thinking – “cool down” your frontal cortex
 - Use the TRIZ Space/Time/Cost brain trainer



- Boost your creative thinking process by separating in 3 phases

- 1 Data-finding / problem-finding (convergent thinking)
- 2 Idea-finding (divergent thinking) alone or in teams
- 3 Solution-finding (convergent thinking)

- Have fun when you are creative (positive affection) & share ideas and listen to ideas of others (idea sharing) and never criticize in idea finding phase – there is enough time in phase 3 for that



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