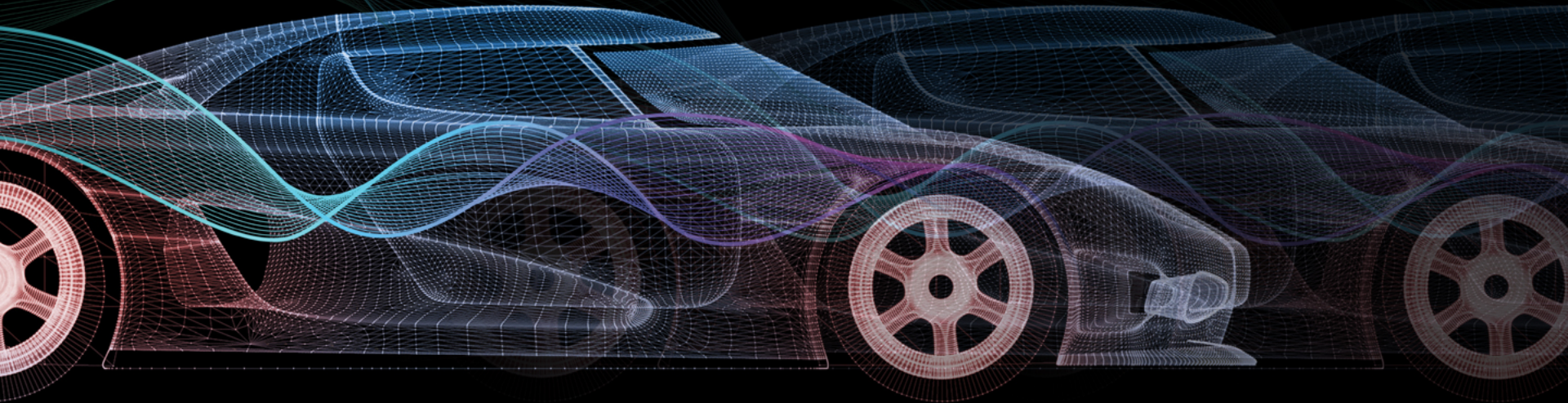


# “Out of the box” innovation with TRIZ

Presented By Monica Rossi



Designing the Future Summit 2018

lppd  Lean Product &  
Process Development

# About Myself

- **Assistant Professor** at Politecnico di Milano (2017)
- **Post-Doc** at Polimi (2015-2016)
- **PhD** in Industrial Engineering at Polimi (2014)
- MSc on **Management Engineering** at Polimi
- Exchange in **MIT** (2013), **Tokyo Metropolitan University** (2015), **Sorbonne UTC** (2016), **Rutgers** (2016)
- My Topics:
  - ✓ **Life Cycle Thinking & Lean Thinking** – *Product Life Cycle Management, Lean Product & Process Development, Lean Start-up, Circular Economy, Sustainable Development*



# Rationale

*Organizations* want to deliver to their customers **innovative and creative solutions**. But they are not always successful!



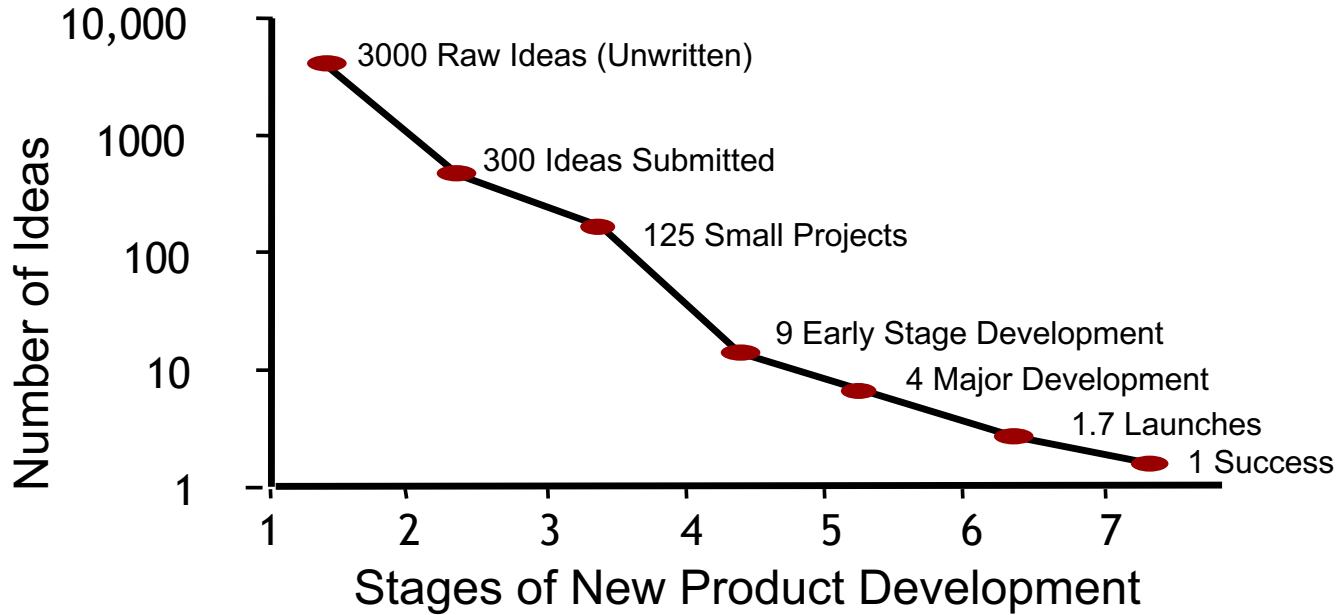
# Rationale

*Organizations* want to deliver to their customers **innovative and creative solutions**. But they are not always successful!

Designers from any kind of enterprises, often face **technical problems** for which they struggle to find an **effective solution**.



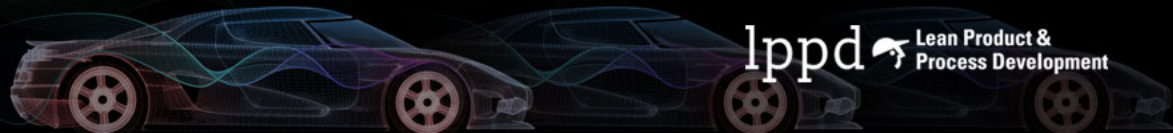
# From raw ideas to successful products



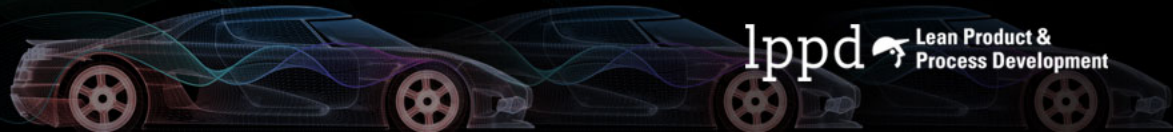
Source: G. Stevens and J. Burley, "3000 Raw Ideas = 1 Commercial Success!" *Research•Technology Management*, 40(3): 16-27, May-June, 1997.



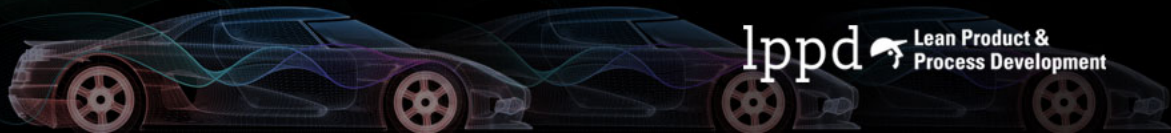
# Obstacles to innovation



# A4 Paper

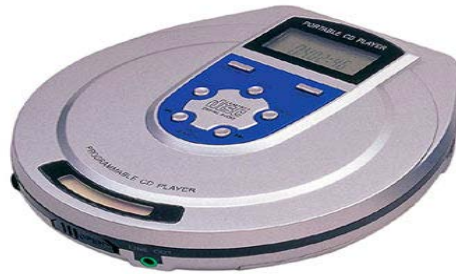


# CD-DVD





# Which is the minimum size of a CD player?



#1 - Psychological Inertia



# Which is the minimum size of a CD player?



#1 - Psychological Inertia

# How to distribute 50 cherries among 3 kids?

Problem (Primary School)



???

#2 - Lack of Structured Approach

# How to distribute 50 cherries among 3 kids?

Problem (Primary School)



Type of Problem: ***arithmetic***

Model of problem: ***50/3***

Tool: ***division***

Model of Solution: ***16,666...***

**#2 - Lack of Structured Approach**

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Problem (Primary School)



Scientific Problem



Specific Solution

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Problem (Primary School)



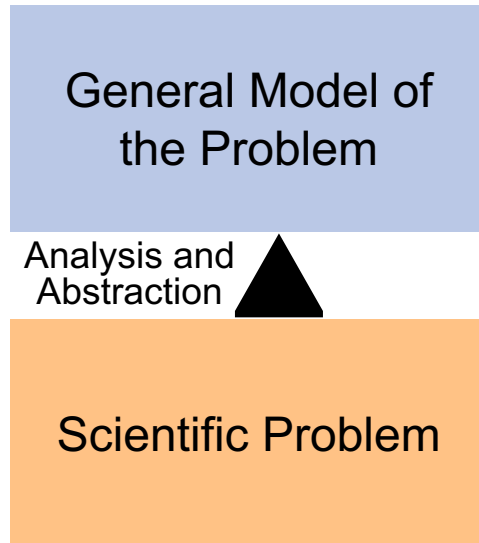
Scientific Problem



Specific Solution

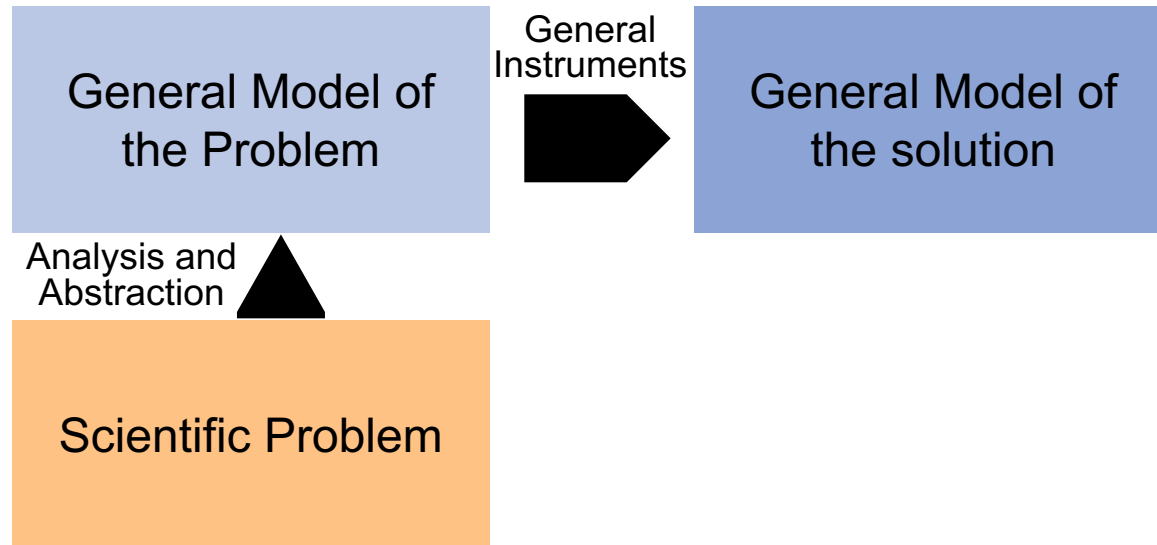
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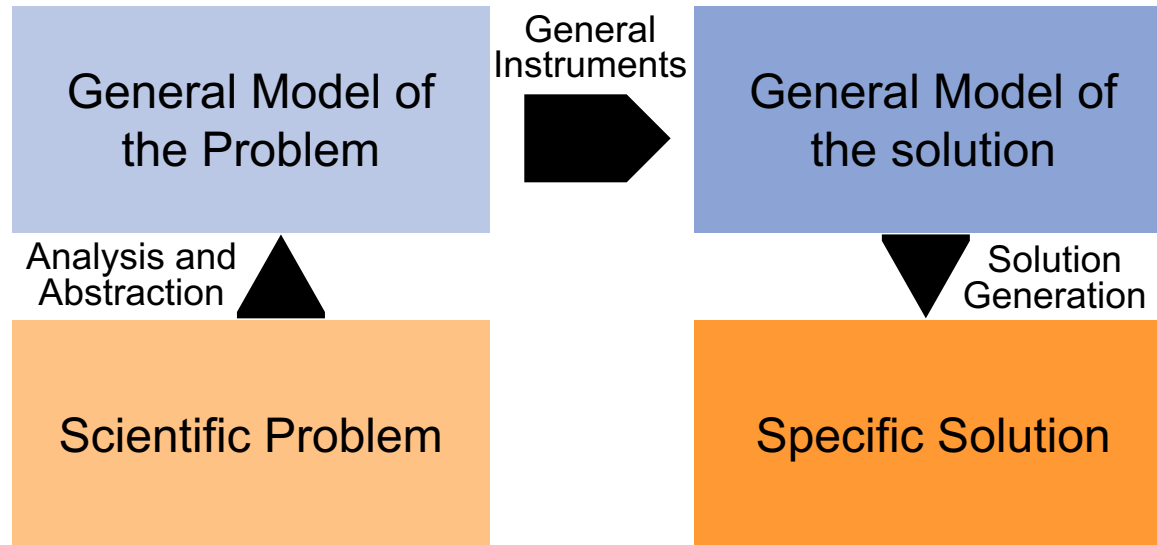
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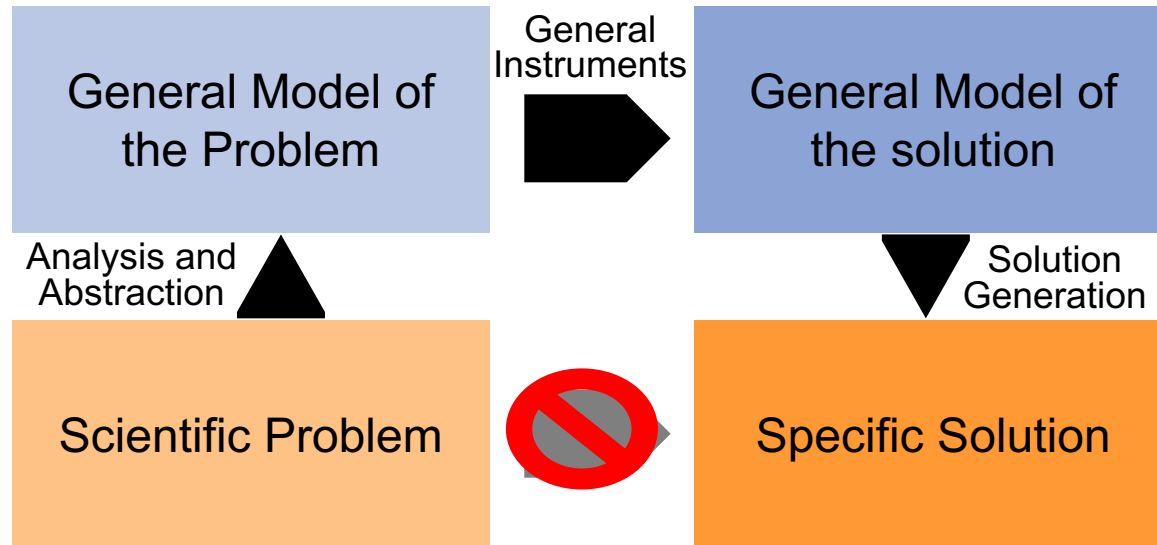


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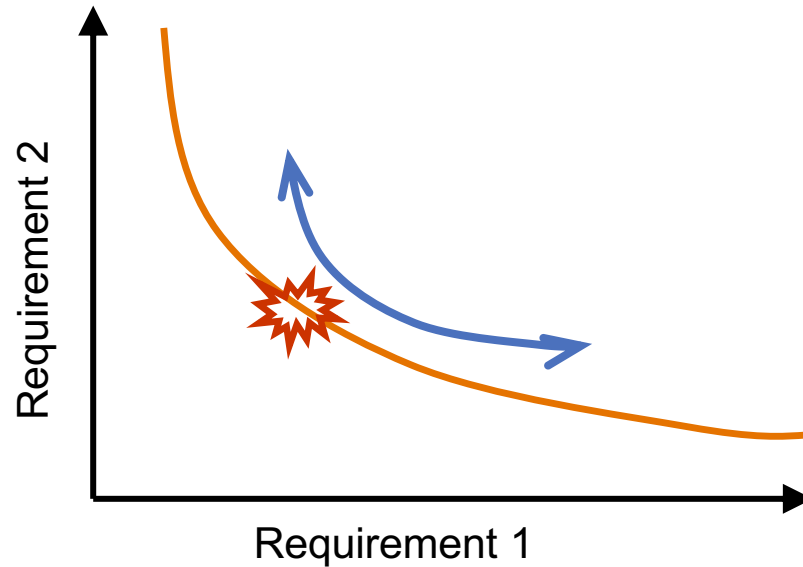
Model of Solution: **16,666...**

Solution:

**16 cherries to each kid**

**#2 - Lack of Structured Approach**

# Optimal Solution or Compromise?



## #3 – Conflicts and Trade-Offs

# Theory of Inventive Problem Solving



Genrich Altshuller  
(1926-1998)

Analysis of hundreds  
of thousands  
inventive solutions



- 99% of inventions use already known solution principle
- Less than 1% are really pioneering inventions
- Breakthrough solutions emerge from resolving contradictions
- Inventors and strong thinkers use patterns
- Creative problem solving patterns are universal
- Creative ideas can be produced in a systematic way



# Theory of Inventive Problem Solving

The architecture of TRIZ is based on Three Postulates

1. Postulate of **Objective Laws of Systems Evolution**
2. Postulate of **Contradiction**
3. Postulate of **Specific Situation**

