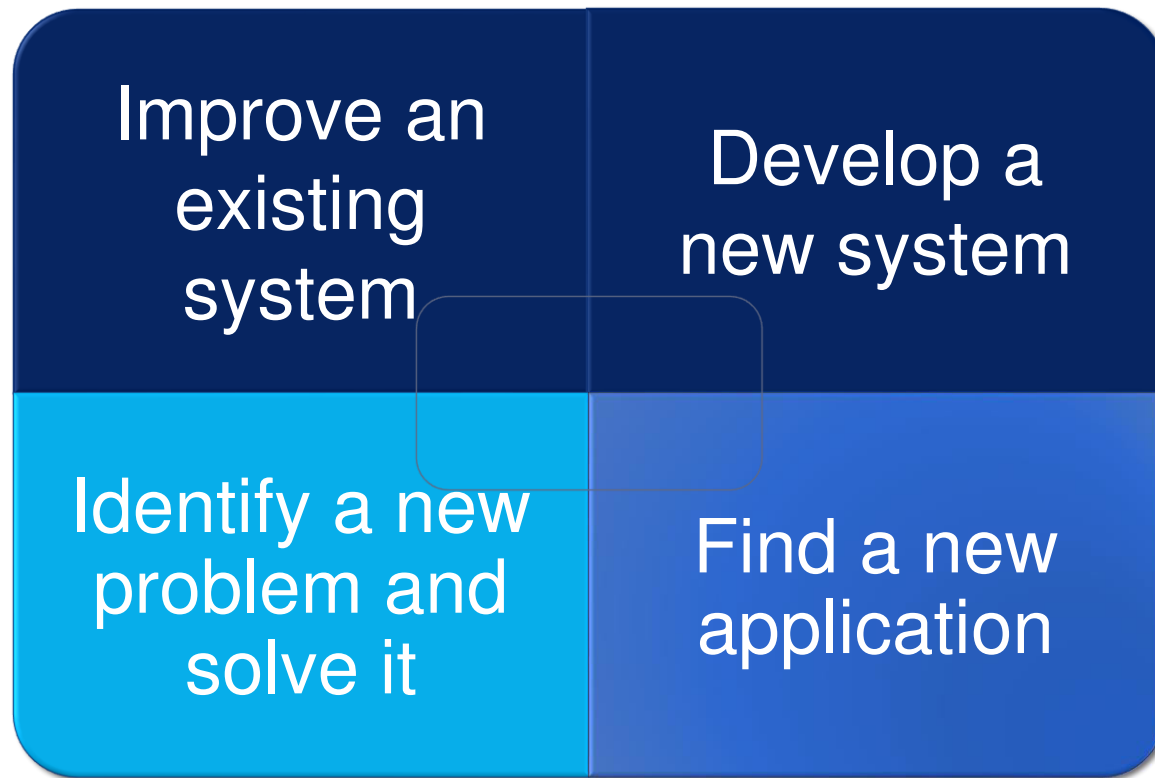


USING NEED DYNAMICS TO IDENTIFY HIGH-POTENTIAL INNOVATIONS

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What innovation tasks can TRIZ help with?



Strong

Good

Weak/Absent

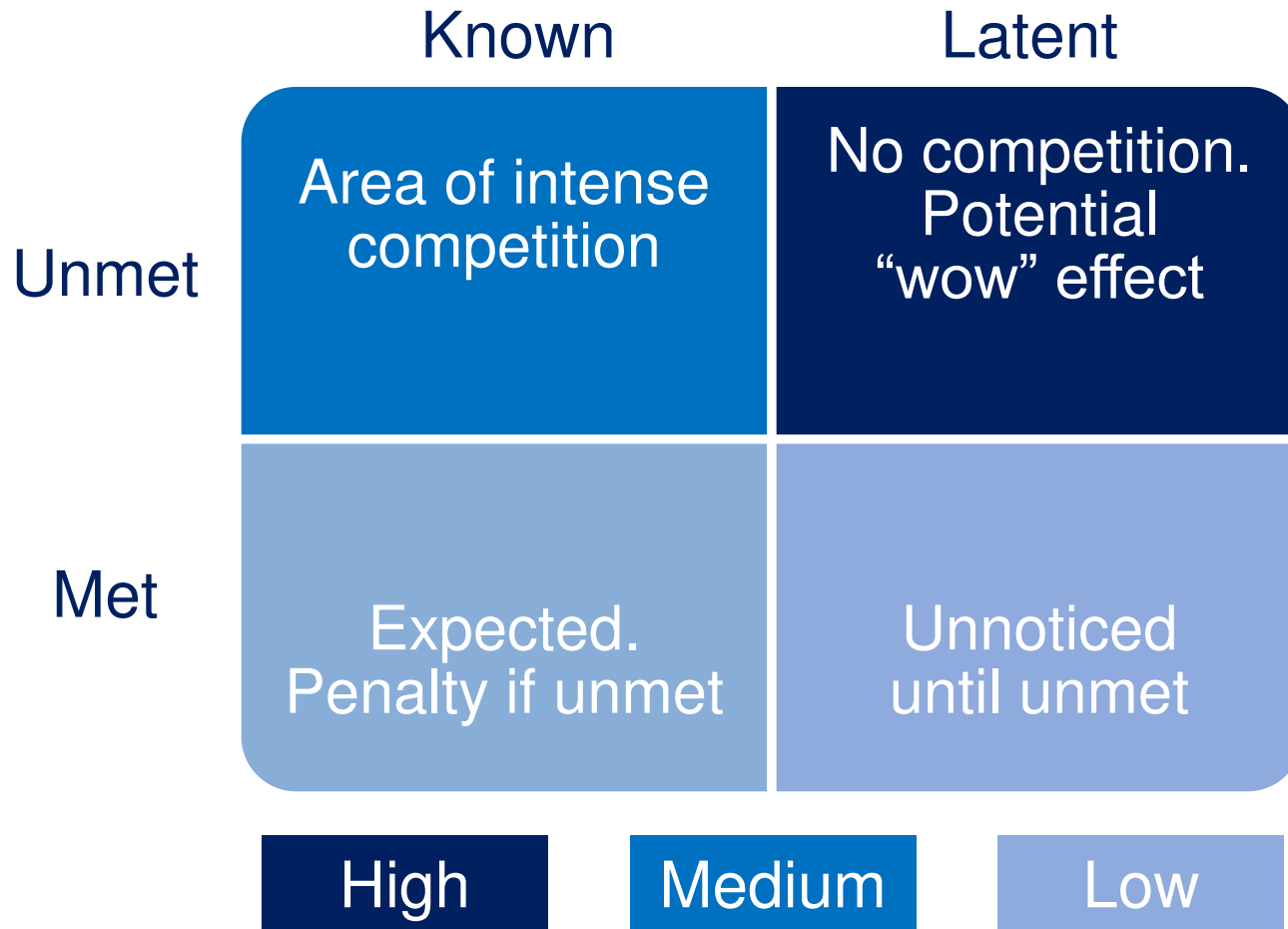
<http://matriz.org/wp-content/uploads/2012/09/TRIZ-Development-High-Priority-Directions-Summary-Eng.-100913-VF.pdf>

What is Innovation?

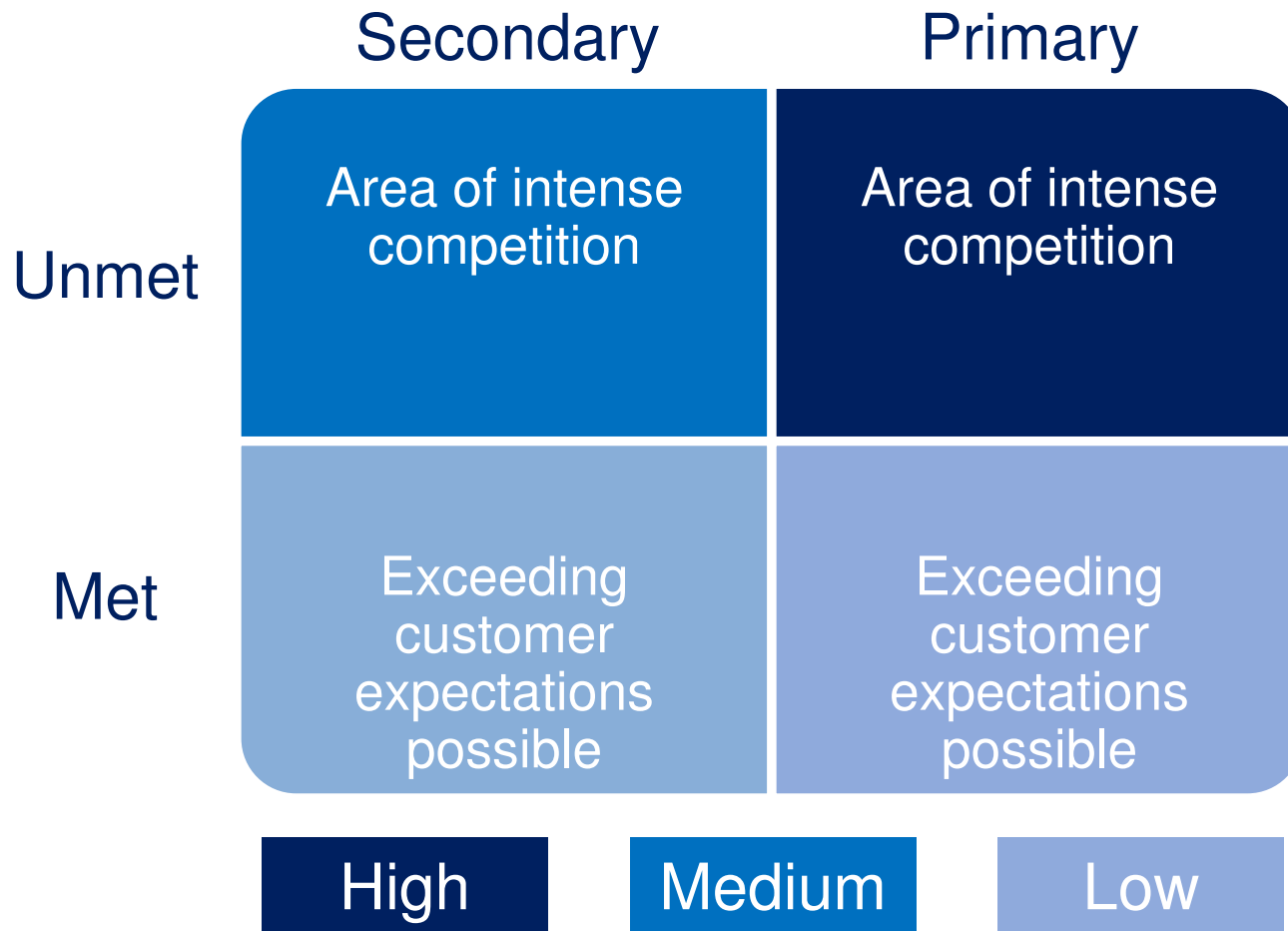


Satisfaction of unmet customers needs

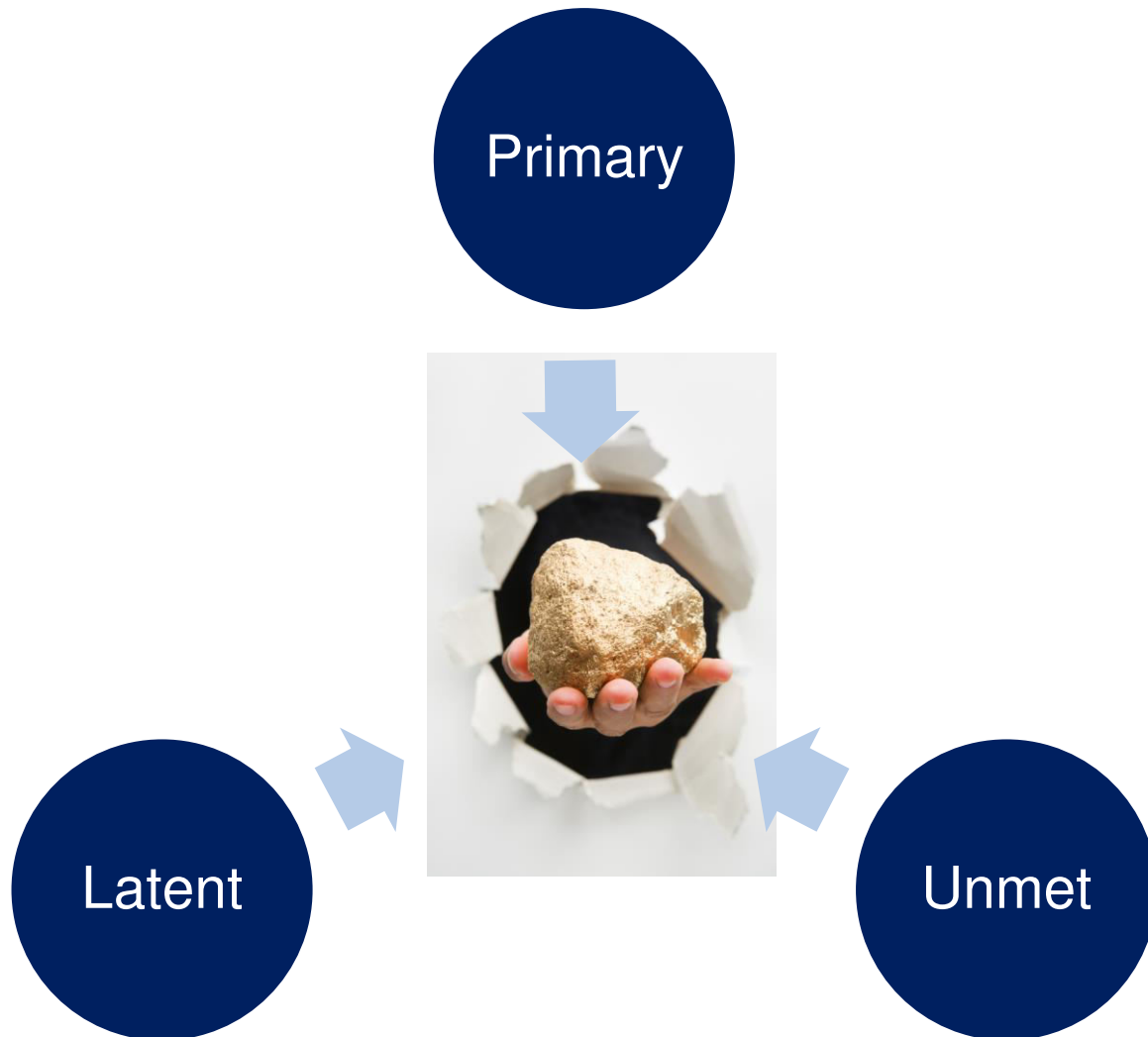
Business value of meeting needs



Business value of meeting needs



Innovation sweet spot



What will customers want?

- Leading non-TRIZ approach: Listen to the VOC



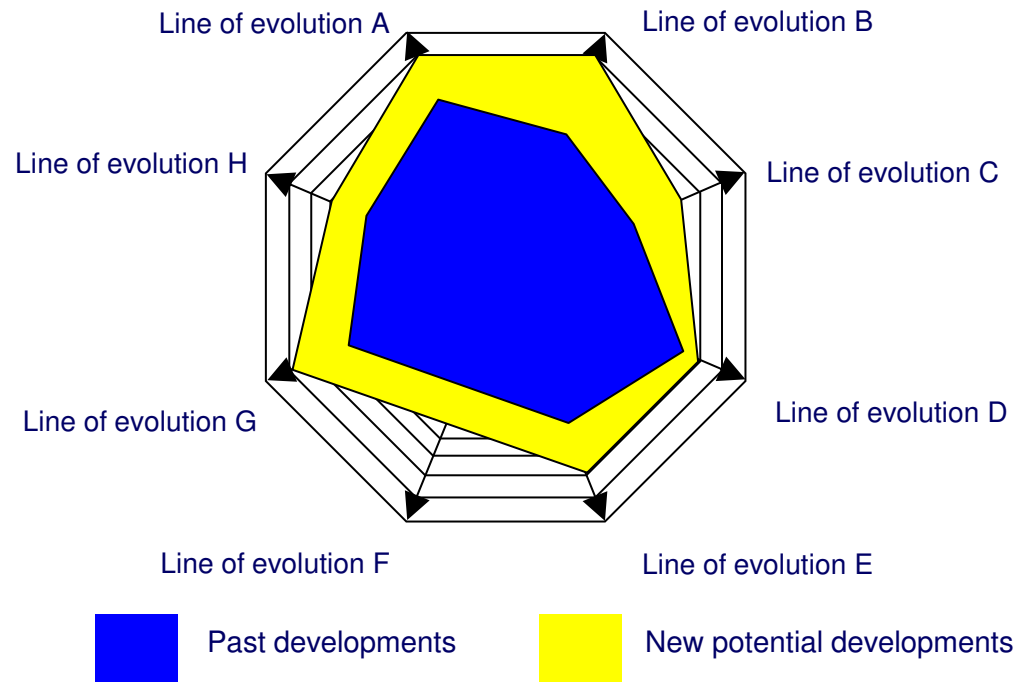
- Every competitor tends to ask similar questions and gets similar answers.
- Customers don't ask for improvements they cannot imagine.

What will customer want?

- Leading TRIZ approach: Lines of evolution

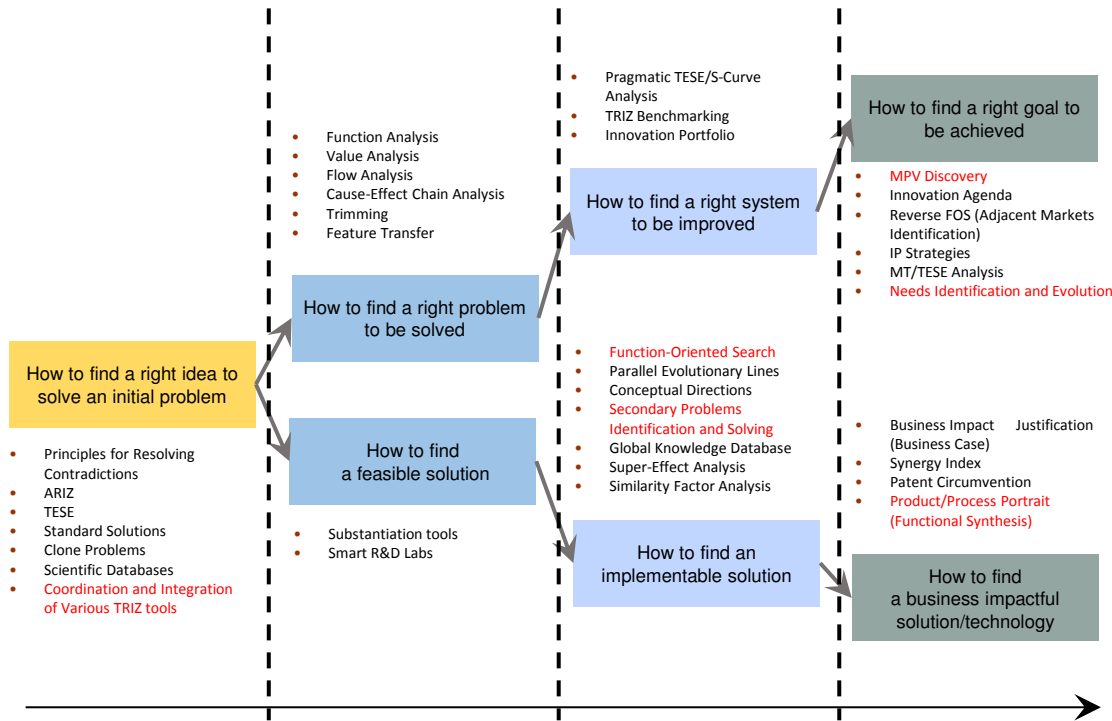


Which lines of evolution should I use to improve my product's market share?



- TRIZ predicts next product evolution, but does not answer the question, “Why would the market need this innovation?”

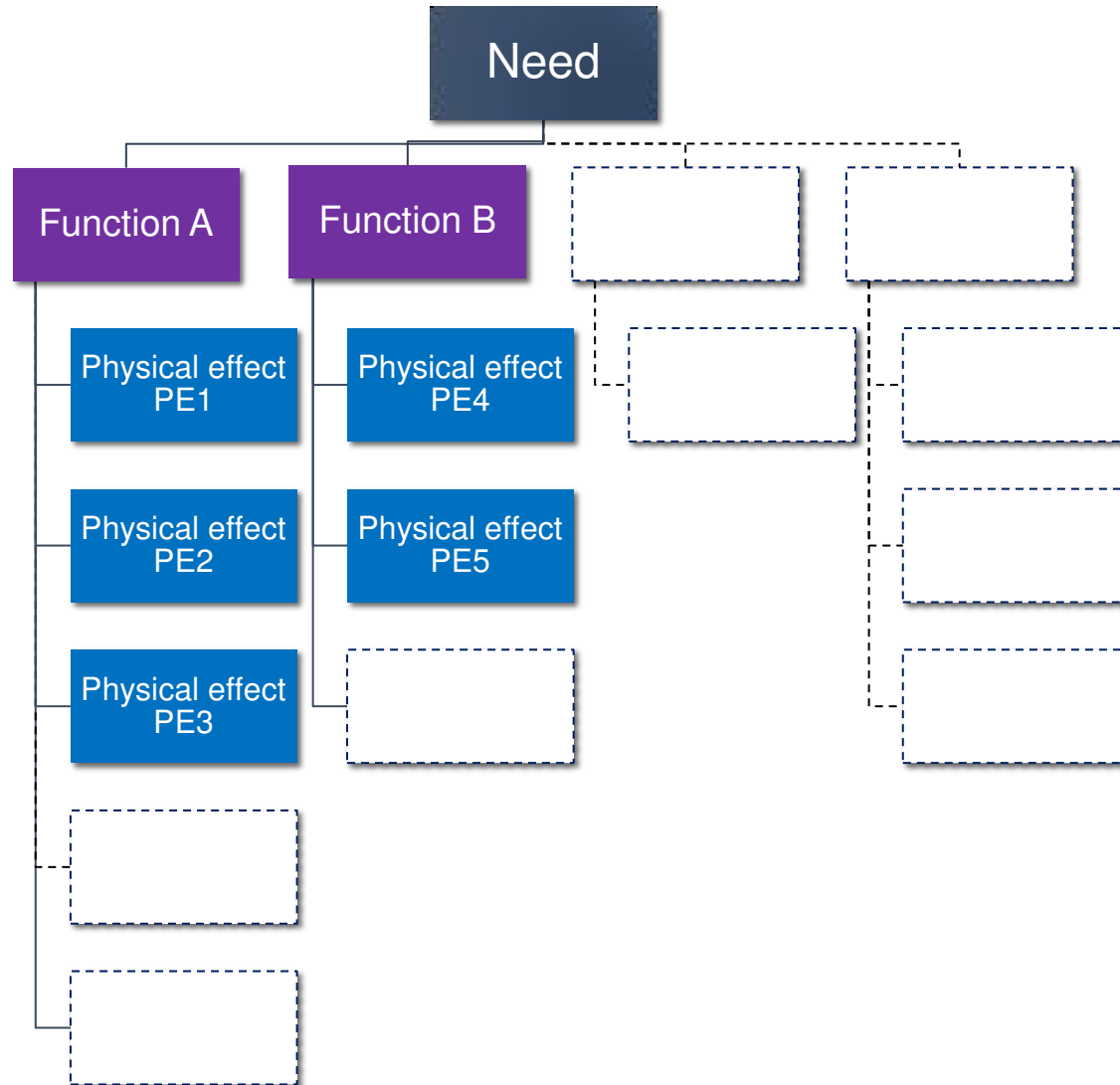
High-priority directions for TRIZ development



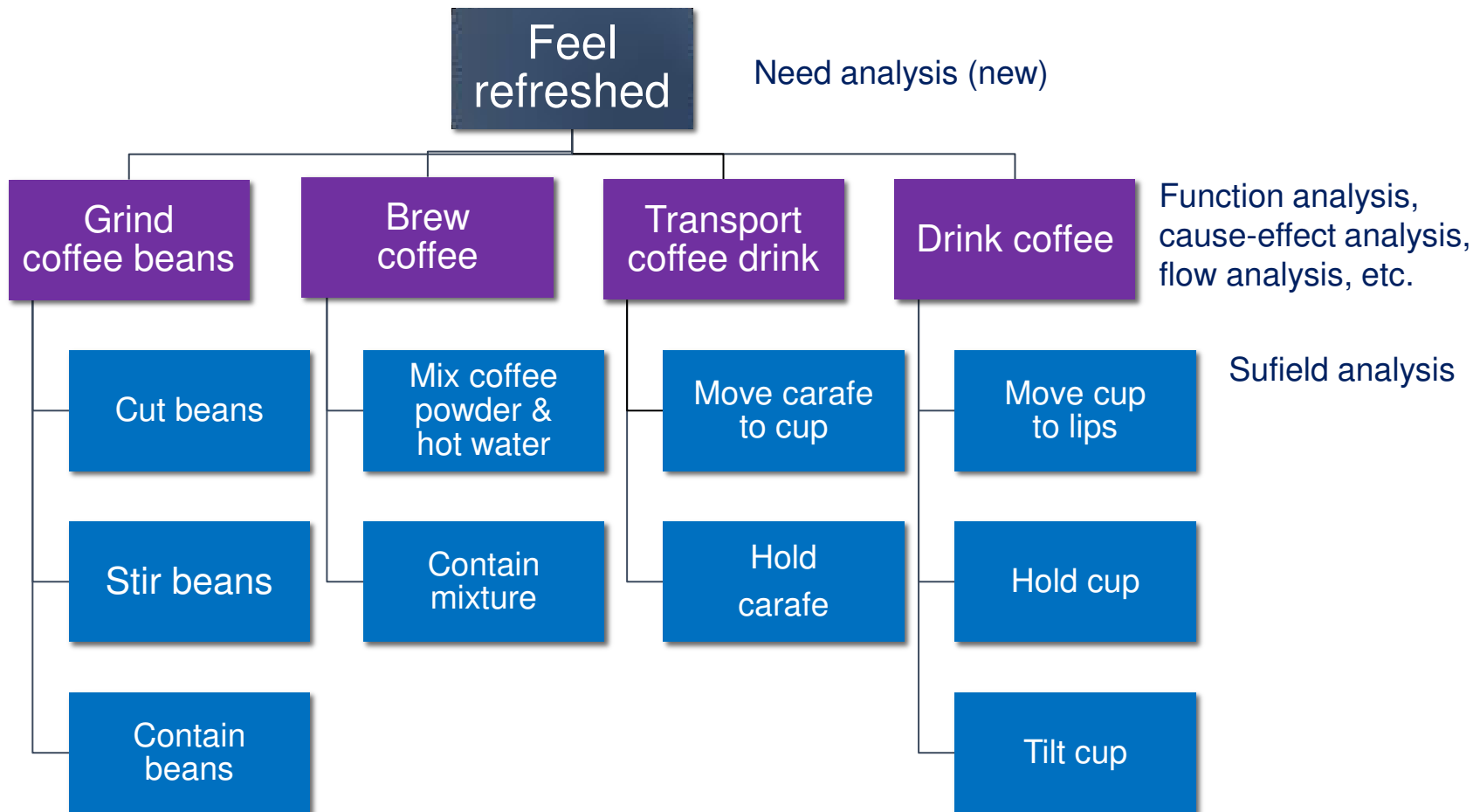
- Integration of TRIZ tools based on a unified language
- Addressing secondary problems
- Analogy-based solution search
- Transition from business challenges to technical problems
- **Identification of high-potential innovations based on analysis of needs and wants**
- Development of products and processes from scratch

Proposed by the TRIZ Development Research Council of MATRIZ (2013)

The Hierarchy “Need – Function – Physics”



The Hierarchy “Need – Function – Physics”



History

- 1980: Genrikh Altshuller initiates a study of the need dynamics and their influence on the evolution of technology
- 1980-84: Igor Vertkin and Victor Fey are principal researchers
- 2012: Victor Fey continues the research

Main concepts and findings

- “Qualitative” needs vs. “quantitative” needs
- Transition from fulfilling “quantitative” needs to fulfilling “qualitative” ones
- Simultaneous fulfillment of many needs
- Need decomposition
- Imitation of need fulfillment
- DIY
- Conflicts between individual’s needs and those of a larger group as sources of technological evolution.

What are needs?

- Needs and wants
- One object – multiple needs
- Latent needs
- Needs and anti-needs
- Need permanency
- Need intensification
- Hierarchical conflicts between needs

Need vs. want

Need



Want



- A need is something one must have, cannot do without.
- A want is something one would like to have, but can survive without.
- A need for one is a want for another.

Yesterday's want becomes today's need

Want



Need



- In the beginning the automobile was a toy, but today it's a necessity.

One object – multiple needs



Latent needs



- Some needs are explicit while others are latent (unexpressed).
- Satisfying latent needs often leads to new and rich market opportunities.

Most needs are permanent



Most needs rarely change, while systems that meet these needs (solutions) constantly evolve.

Need intensification



- Some new technologies make existing needs more acute (unmet).
- For example, proliferation of digital social networks and databases led to the increased vulnerability of privacy.

Needs and hierarchical conflicts

	Person	Group	Society
Person	<ul style="list-style-type: none"> • Team member vs. Team member • Employee vs. Employee • Student vs. Student • Sibling vs. Sibling 	<ul style="list-style-type: none"> • Team member vs. Team • Employee vs. Company • Student vs. Class • Customer vs. Company 	<ul style="list-style-type: none"> • Person vs. state laws and regulations • Person vs. societal norms and traditions
Group		<ul style="list-style-type: none"> • Team A vs. Team B • Family A vs. Family B • Company A vs. Company B 	<ul style="list-style-type: none"> • Company vs. state laws and regulations • Minority group vs. societal norms and traditions
Society			<ul style="list-style-type: none"> • Interstate economic, political, scientific, etc. competition

- Hierarchical conflicts are often sources of technology and product innovation.

Can't wait to see a TV commercial?



- TV ads fund TV networks
- Viewers hate commercial brakes
- This is a typical conflict between an individual and a group.
- It can be resolved either by social means (e.g., via regulations), or technologically.

Now you see it, and now you don't

- Skip-commercial DVR



- Predicted in 1984
- First personal DVRs were introduced in 1999

Needs and anti-needs

Need

To be independent
To be safe
To feel busy
To learn
To take responsibility
To share
To lead
To embrace change
To be aggressive
To like variety
To be unique

Anti-need

To belong in a group
To take risk
To relax
To teach
To avoid responsibility
To keep to oneself
To follow
To value stability
To be friendly
To prefer sameness
To blend in

- Most needs have opposites.
- This fact allows for envisioning innovations that address anti-needs.

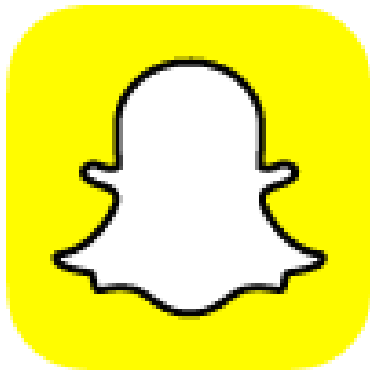
Why do people take photos?



- A photograph is a solution for the need to keep memories.
- An anti-need: to destroy memories.
- What would be a solution for such an anti-need?

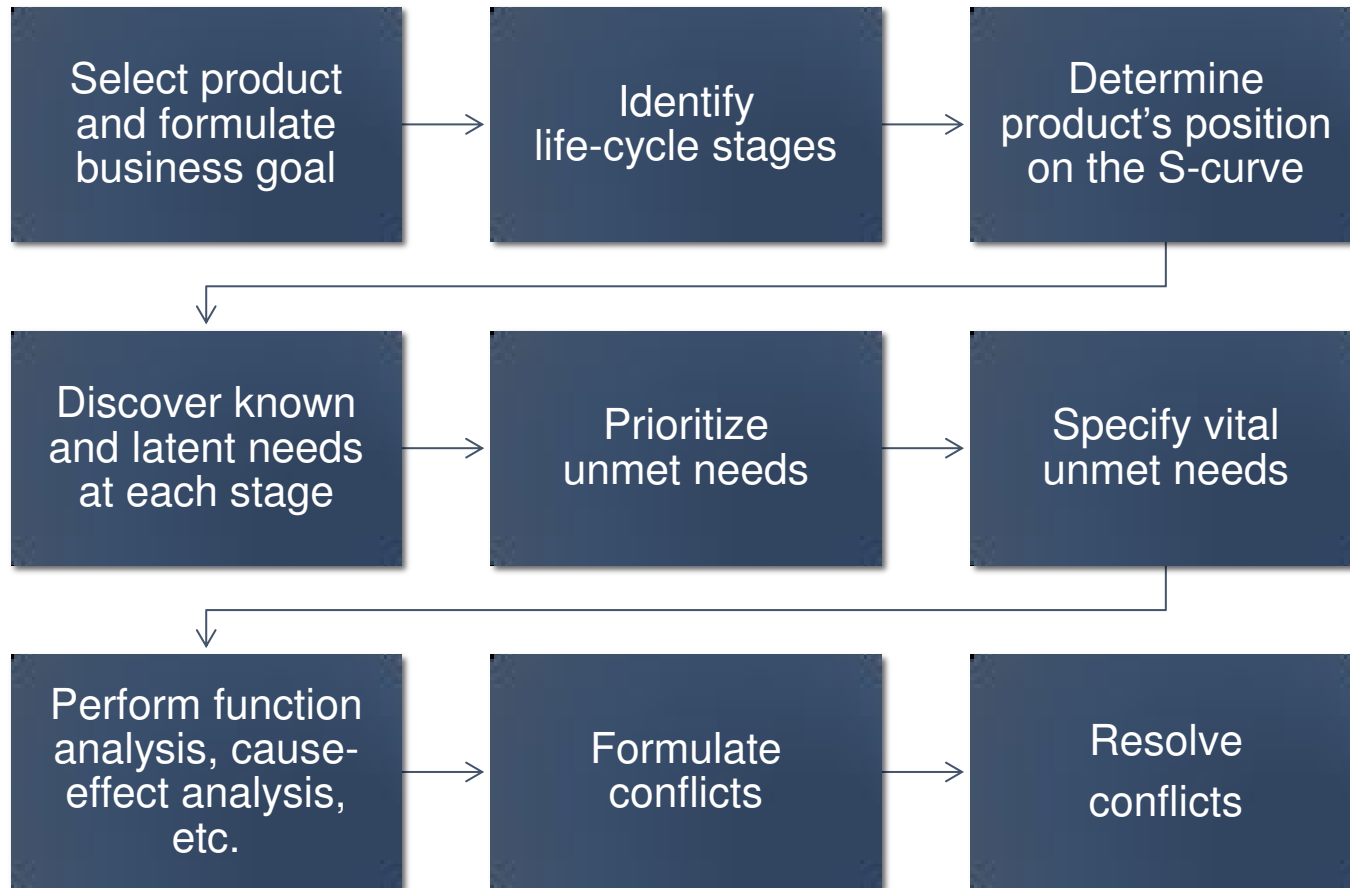
Temporary photos

- Conventional photo messaging:
 - Take a photo
 - Send the photo
 - **Store the photo**
- Snapchat photo messaging:
 - Take a photo
 - Send the photo
 - **Destroy the photo** a few seconds after it's been viewed



- 2011: Founder's idea met with a large skepticism
- 2014: 700 million photos & videos per day
Google offers over \$4 billion to acquire

Need-analysis innovation process



Some need discovery techniques

- Need diversification
- Formulating anti-needs
- Need imitation
- Do-It-Yourself

Case study

- By the end of 90's, single-serve coffee brewers became popular in offices in Europe.
- Mars Drinks' FLAVIA earned a good reputation in that market.
- Next major business goal – growing the US market.
- US office coffee-consumption scenery:
 - In-house drip coffee brewers



Defining the business goal and life-cycle stage

Select product
and formulate
business goal

- Object: Single-serve coffee maker
- Business goal: Grow market



Identify
life-cycle
stages

- Office environment

Position on the S-curve

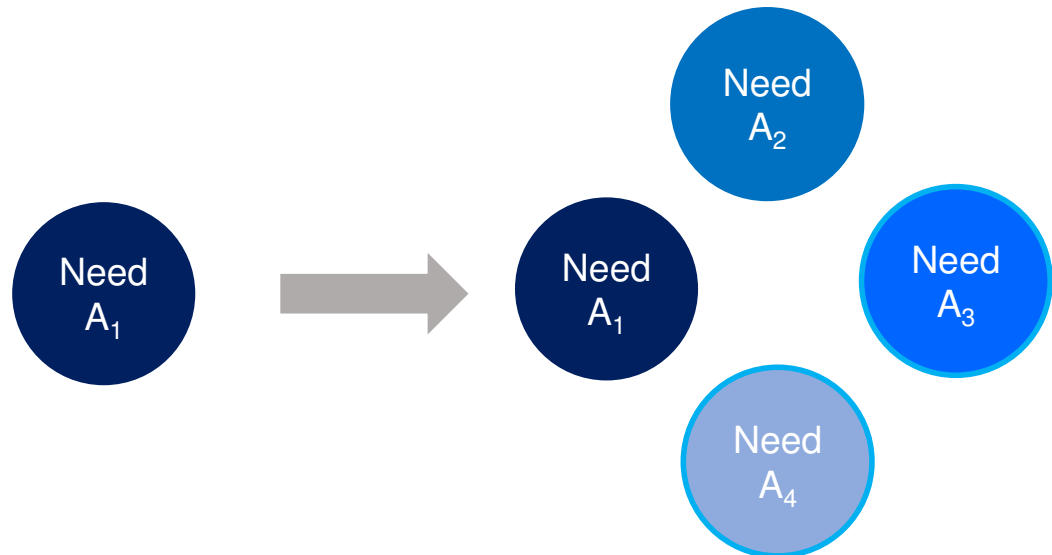
Determine
product's
position on the
S-curve

- Maturity stage (main parameter: coffee quality).
- Directions for development :
 - Introduce a new operating principle
 - Accumulate additional functions
 - Eliminate auxiliary components
 - Improve aesthetics

Need discovery

Discover
known and
latent needs

- Known needs: good/consistent coffee quality, ease of use
- **Latent needs:** Multiple types of drinks
- Trend of need diversification:
 - From meeting one need to meeting many similar needs.



When applied to coffee...

- ...That meant recreating a Starbucks experience



Starbucks offerings



Espresso
machine



Cappuccino
machine



Regular
coffee brewer



Hot chocolate
machine



Tea brewer

Two potential strategies



FLAVIA cappuccino



Prioritizing needs

Prioritize
unmet needs

- Coffee-shop variety in the office



Specify vital
unmet needs

- Espresso
- Cappuccino
- Latte

Let's ask customers

- Too much trouble to look after the fresh milk
- Too much mess
- Cleaning needed

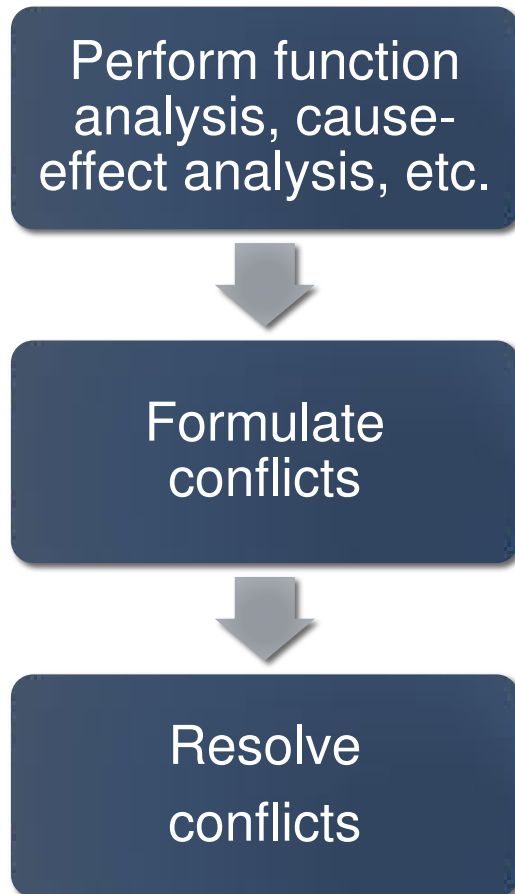


Thanks, but no thanks!



Apply TRIZ

- How to deliver a hassle-free cappuccino drink?



- TRIZ tools used:
 - Functional analysis
 - Trimming
 - Sufield analysis

Result

Flavia™ Drink Station



High-quality drinks:

- Regular coffee
- Espresso
- **Cappuccino (\$40M/year added)**
- Hot tea
- Hot chocolate

Worldwide Patented

Questions and opportunities



- Trends of evolution of needs and wants
- Indicators of the level of need satisfaction
- Methods for the identification of all vital unsatisfied existing needs associated with a given system
- Methods for the identification of all vital latent needs associated with a given system
- Methods for the translation of needs into functional and physical models