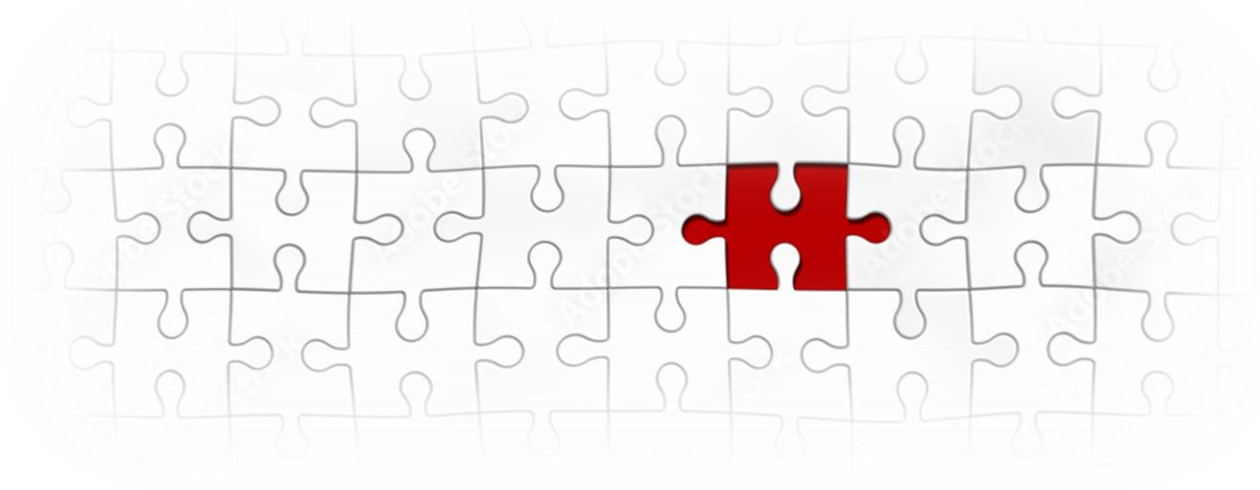
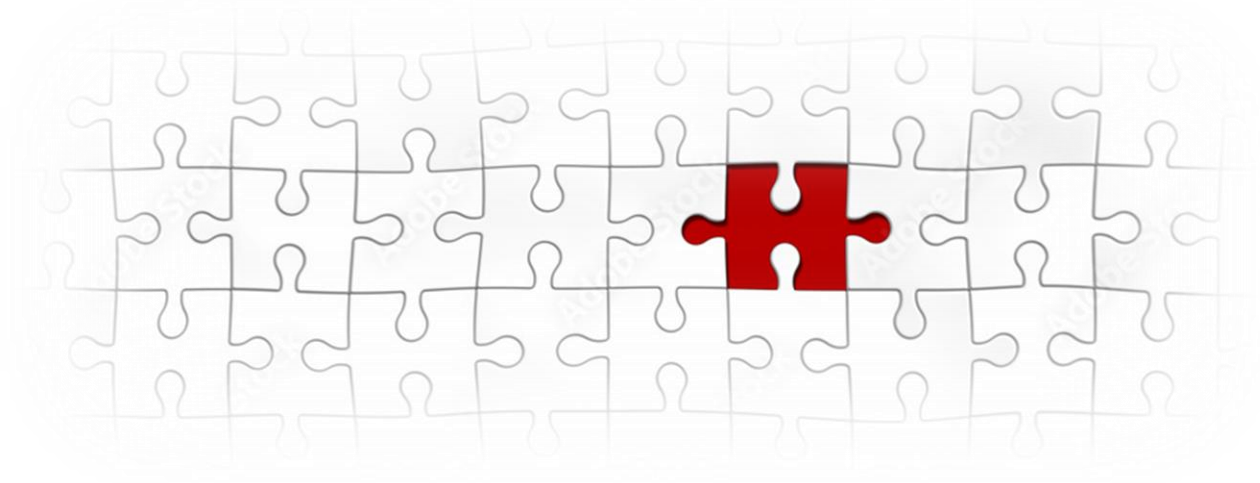
Problem Solving

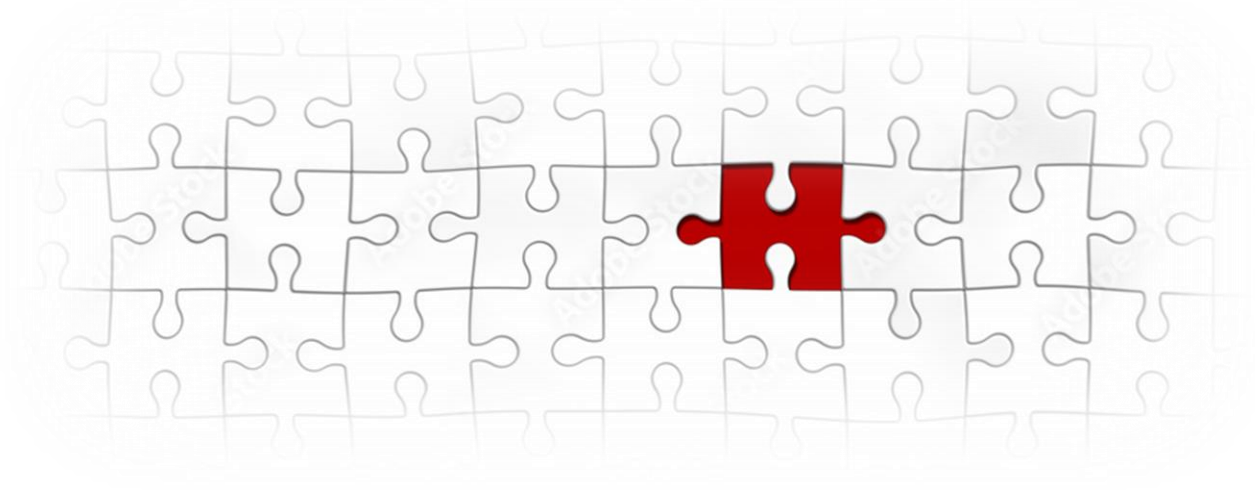
Aditya F. Ihsan



Suppose you are looking for something.
What exactly will you do?



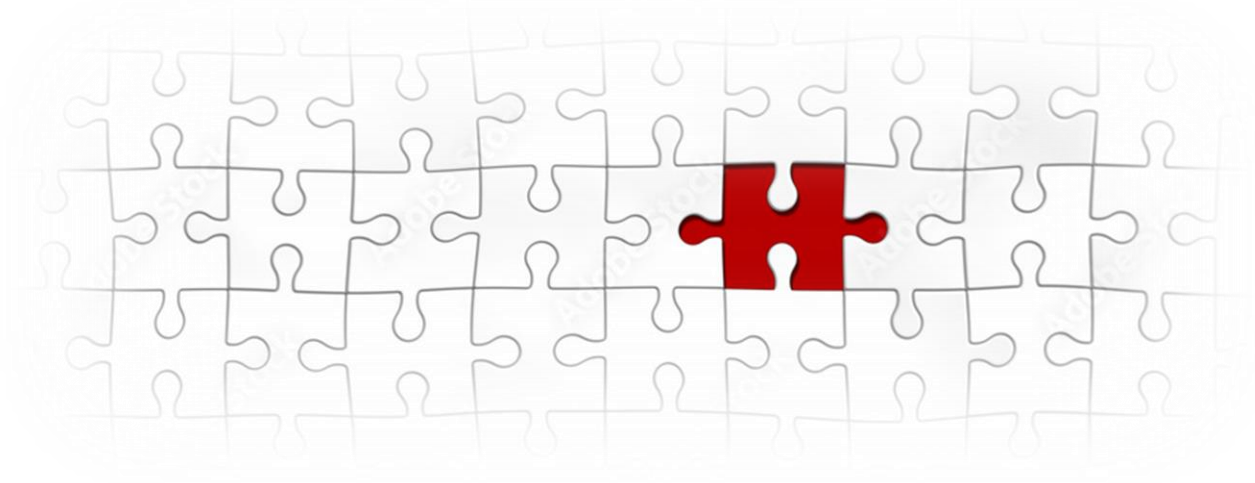
Okay,
First, decide what I'm looking for
Then, what kind of



What is a “problem”?

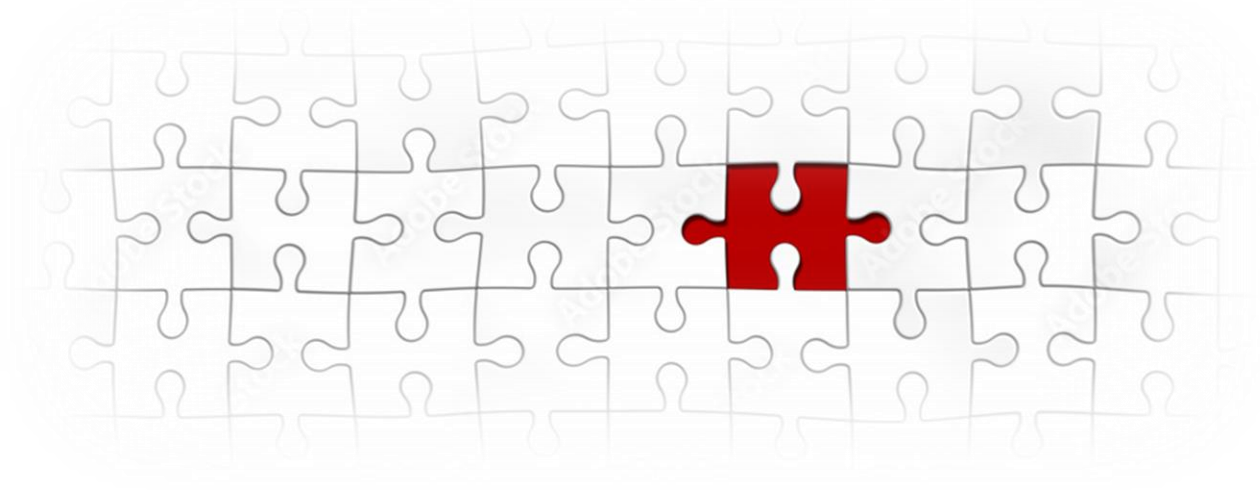
How do you decide “something” IS a “problem”?


地铁



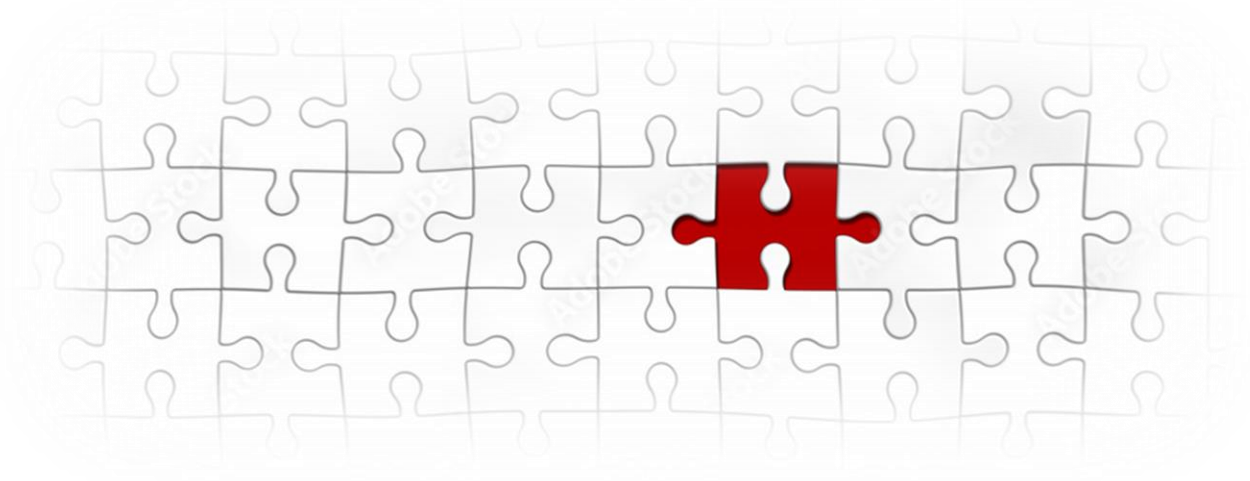
Well, it's kind of obvious.

Let's start with non-obvious ones.



Do you have a personal problem?

Why do you think it is a problem?

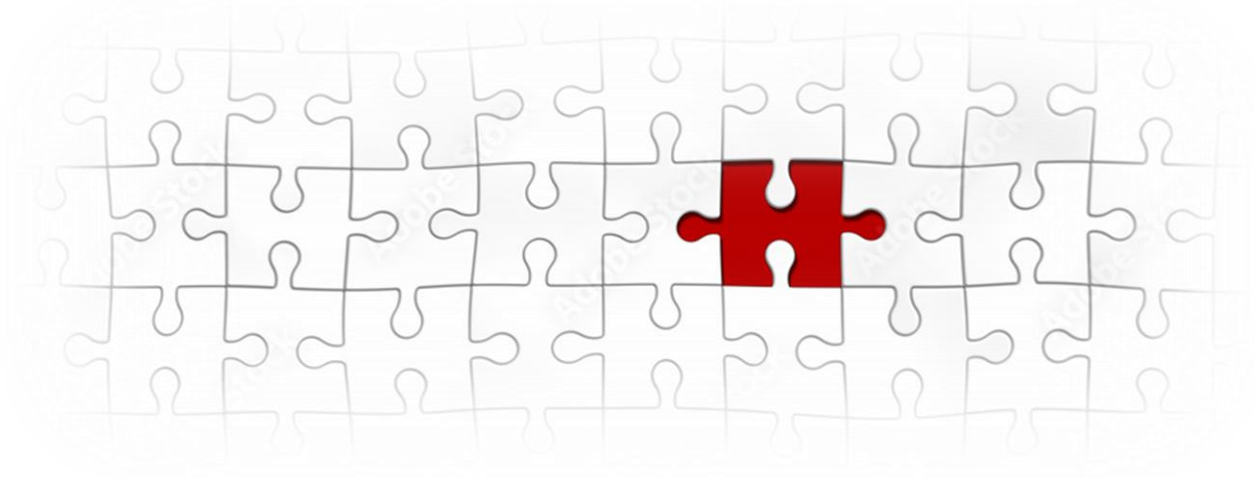


What does happen

+

What should be

Problem

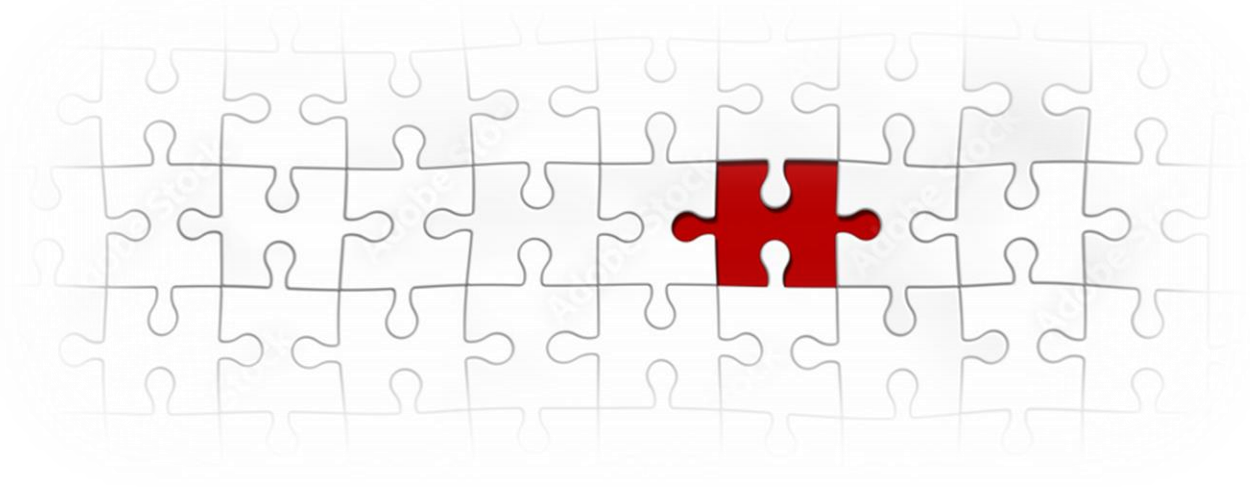


What does happen

Reality

What should be

Values / Standard



What does happen

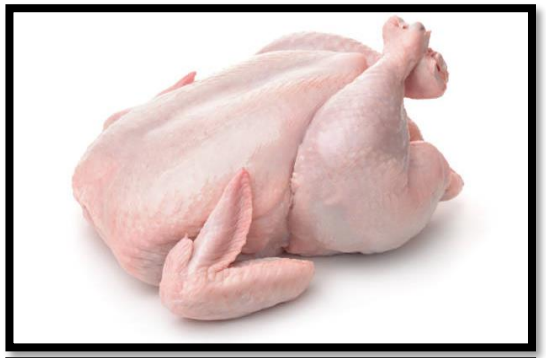
+

What should be

Problem

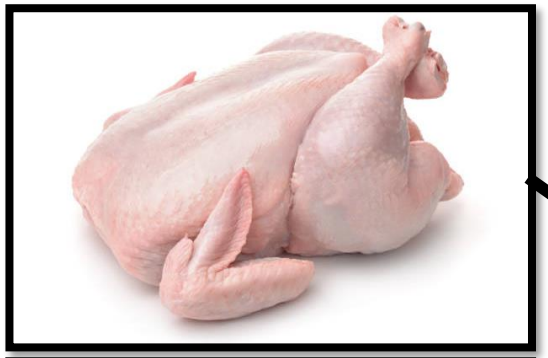
Break it

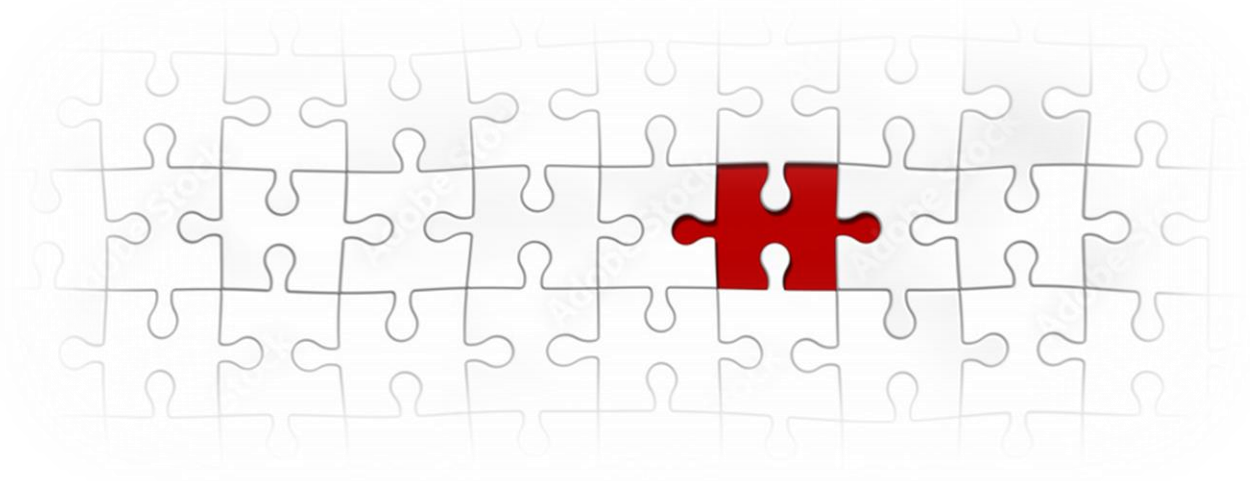
- Sub-problem
- Sub-problem
- Sub-problem



Let's play matching game!

Every object is dealt with its own tool

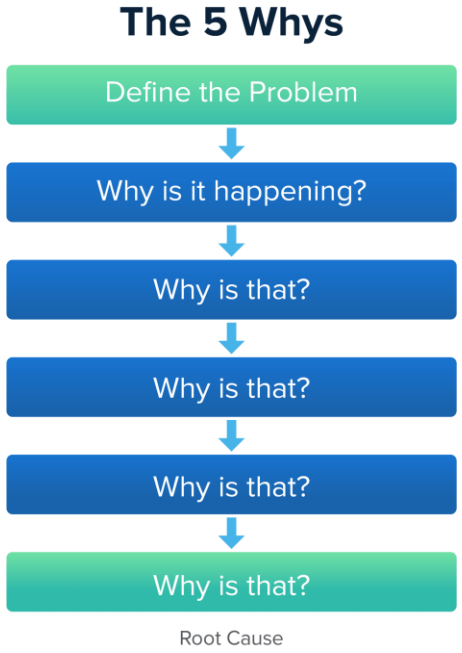




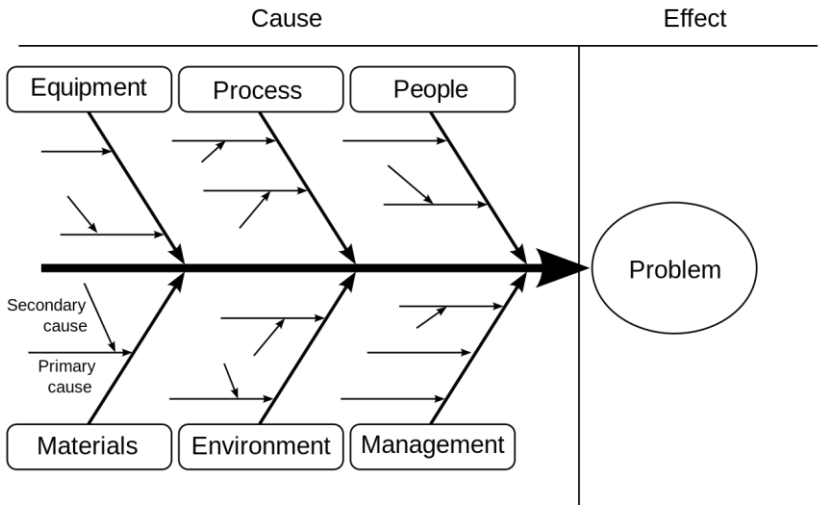
If the only tool you have is a hammer,
you tend to see every problem as a nail

Abraham Maslow

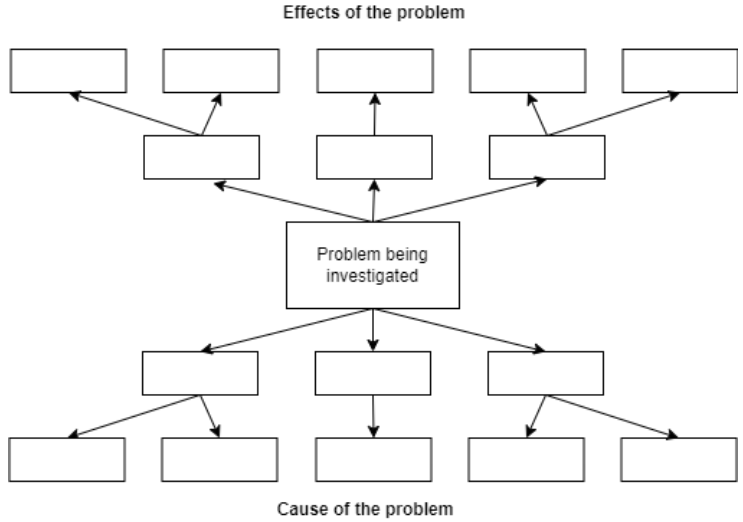
Beberapa pisau analisis umum



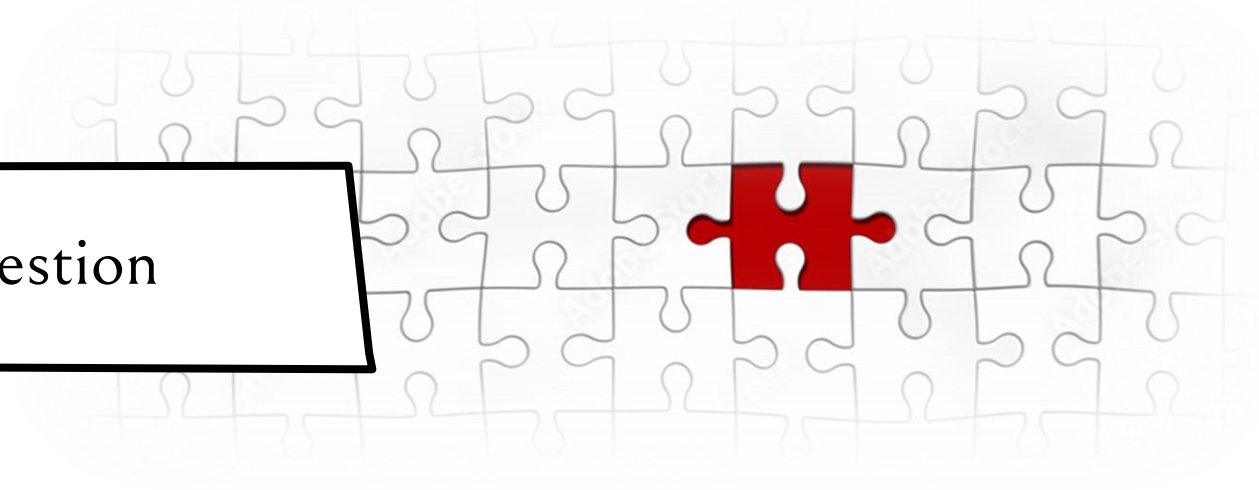
- **Fishbone Diagram**



Problem tree



Every (sub)problem is basically a question

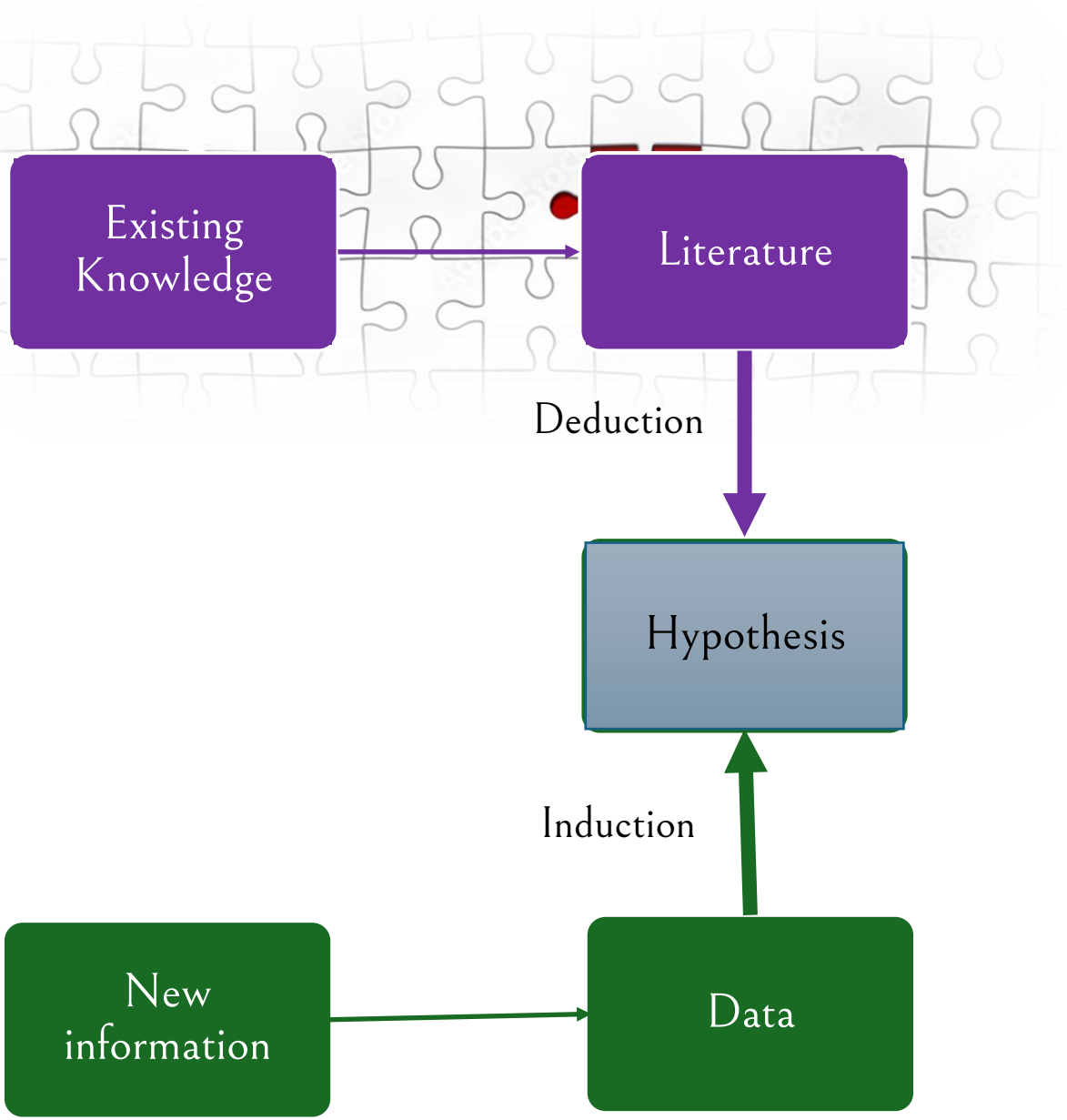


Question → Guess → Check → Answer

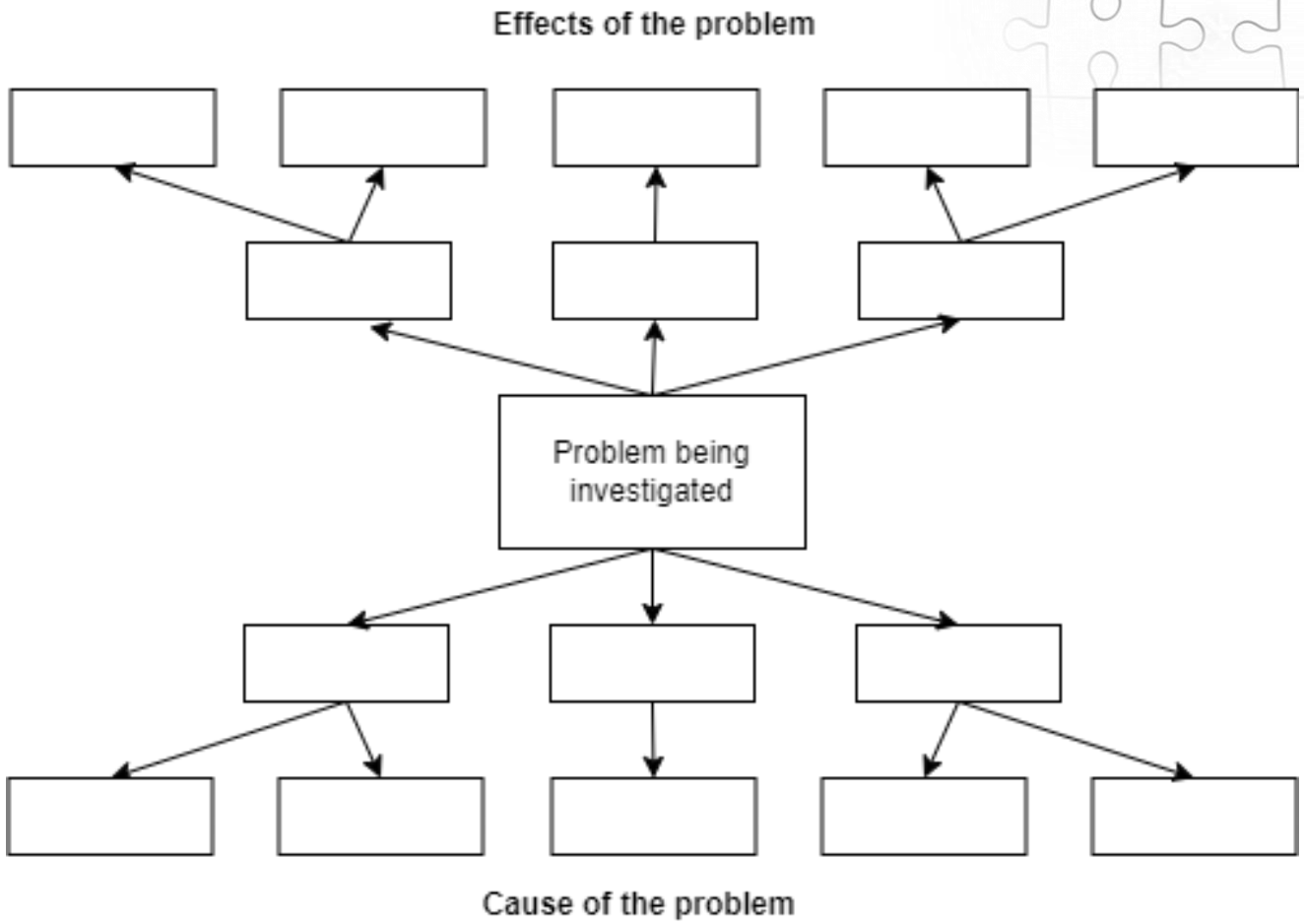
In terms of research

Problem Formulation → Hypothesis → Verification / Testing → Conclusion

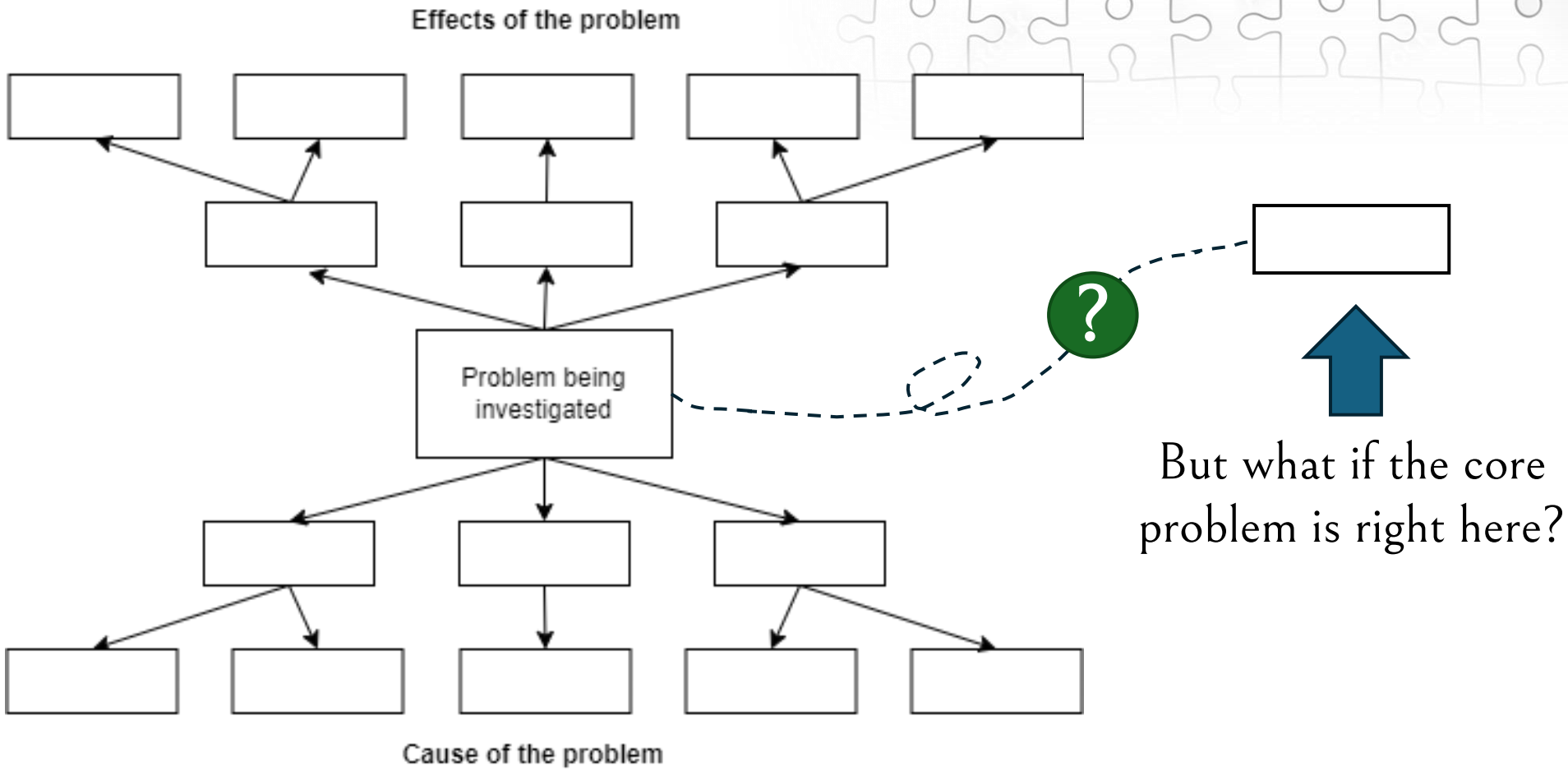
"Hypothesis" can be tested from two ways



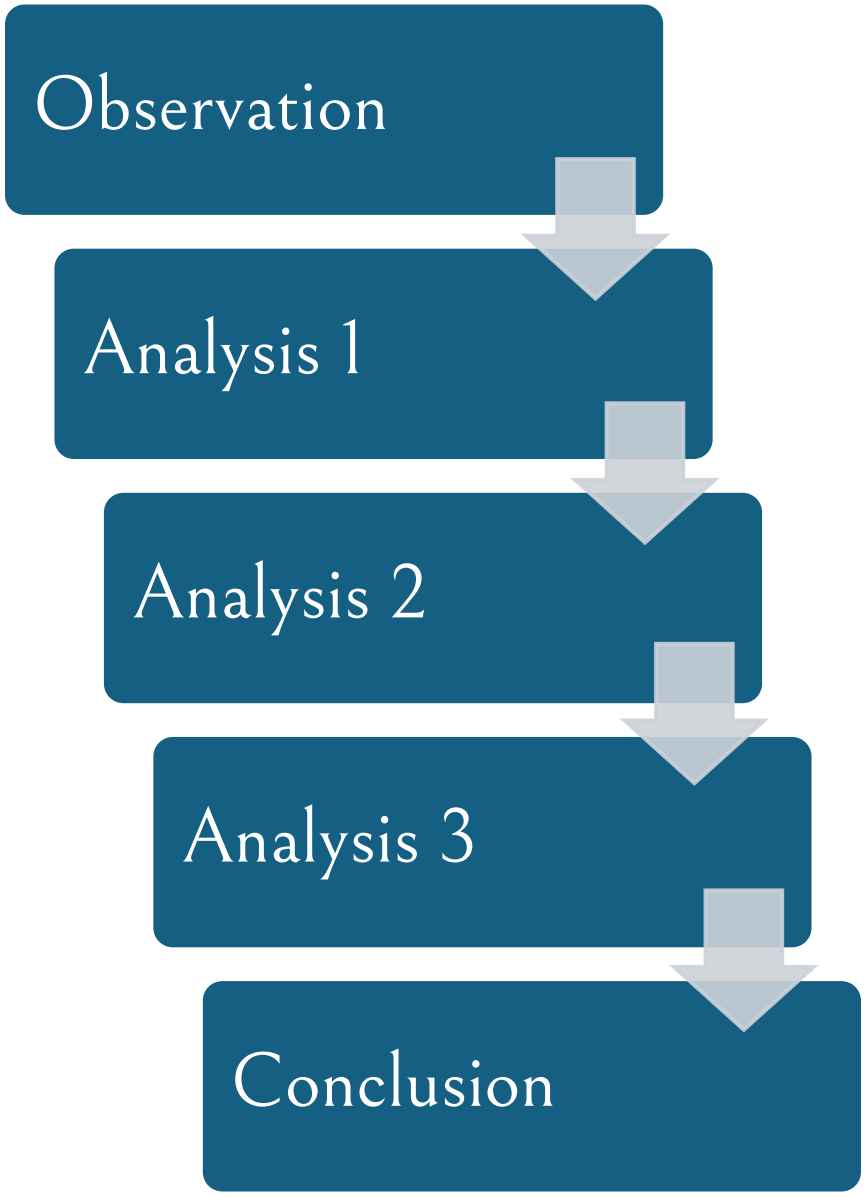
Suppose we have mapped the problem, analytically

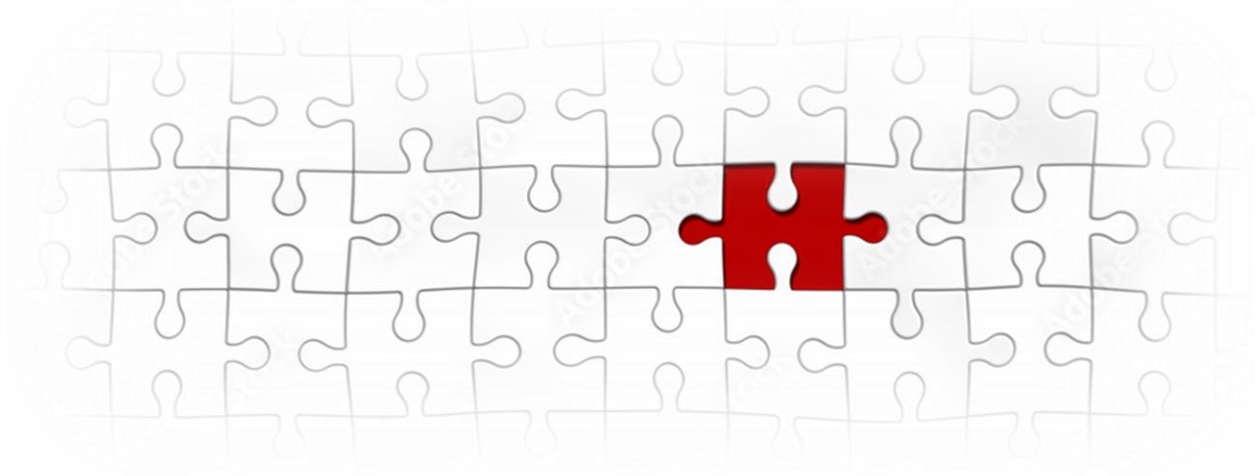


Suppose we have mapped the problem, analytically



But what if the core problem is right here?

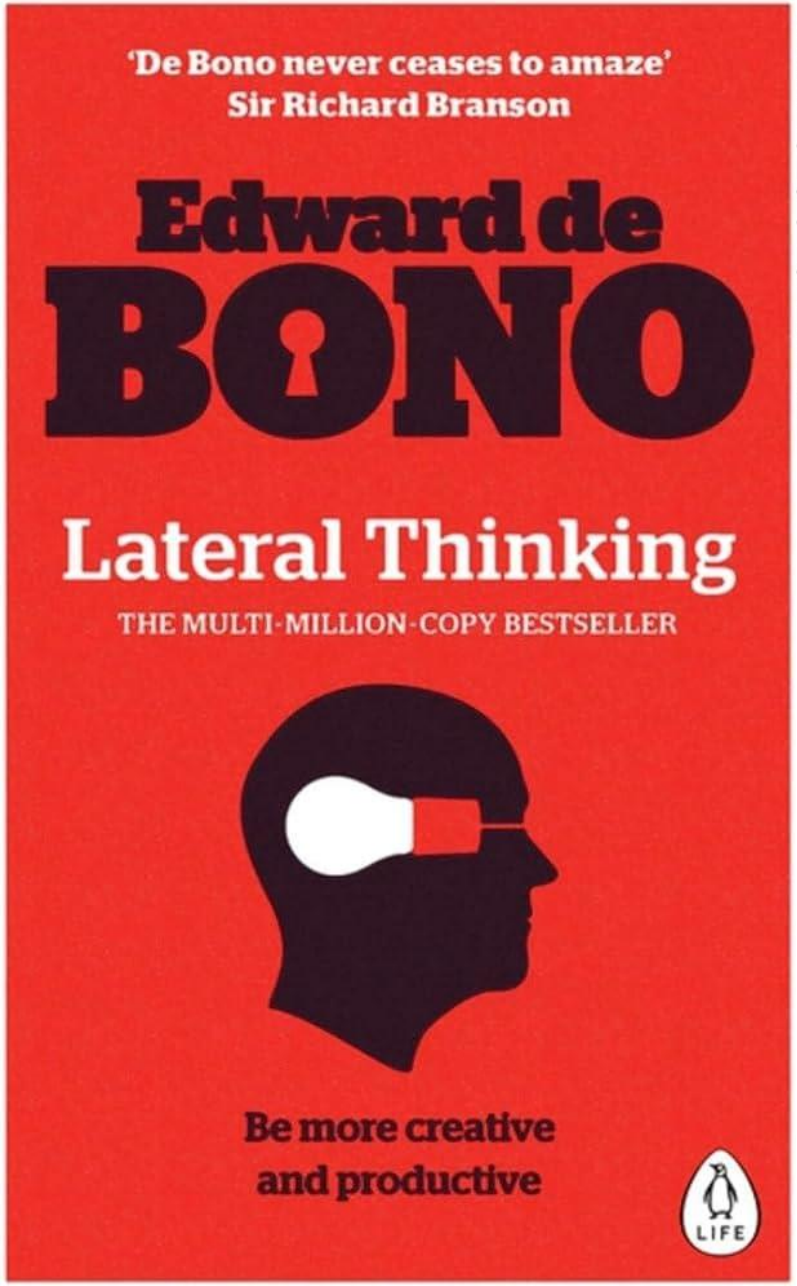


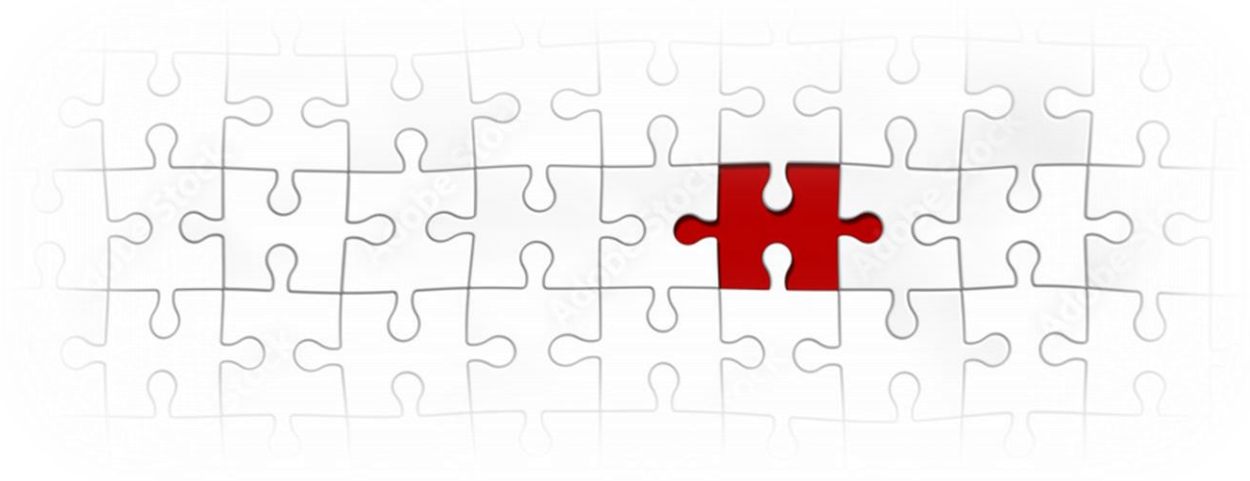


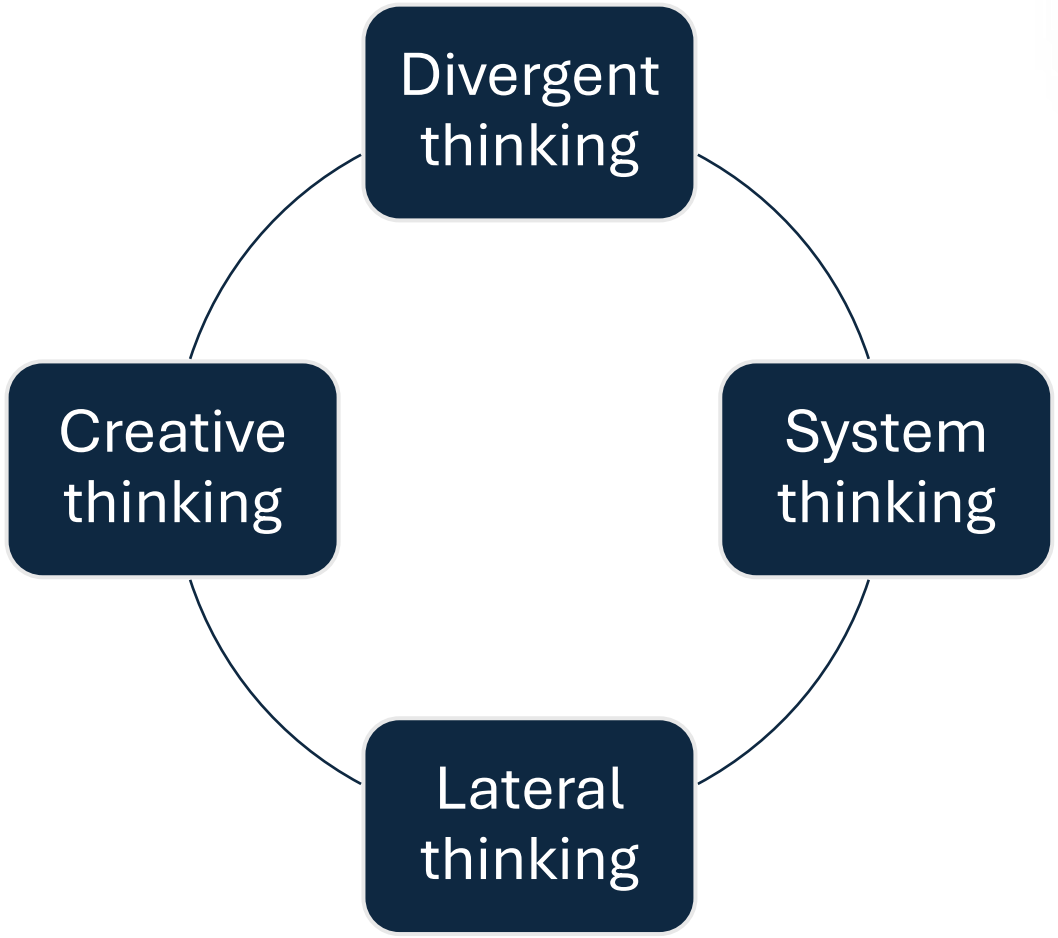
Thinking sequentially and procedurally is sometimes called "vertical thinking"

Whereas there may be another way outside the available path.

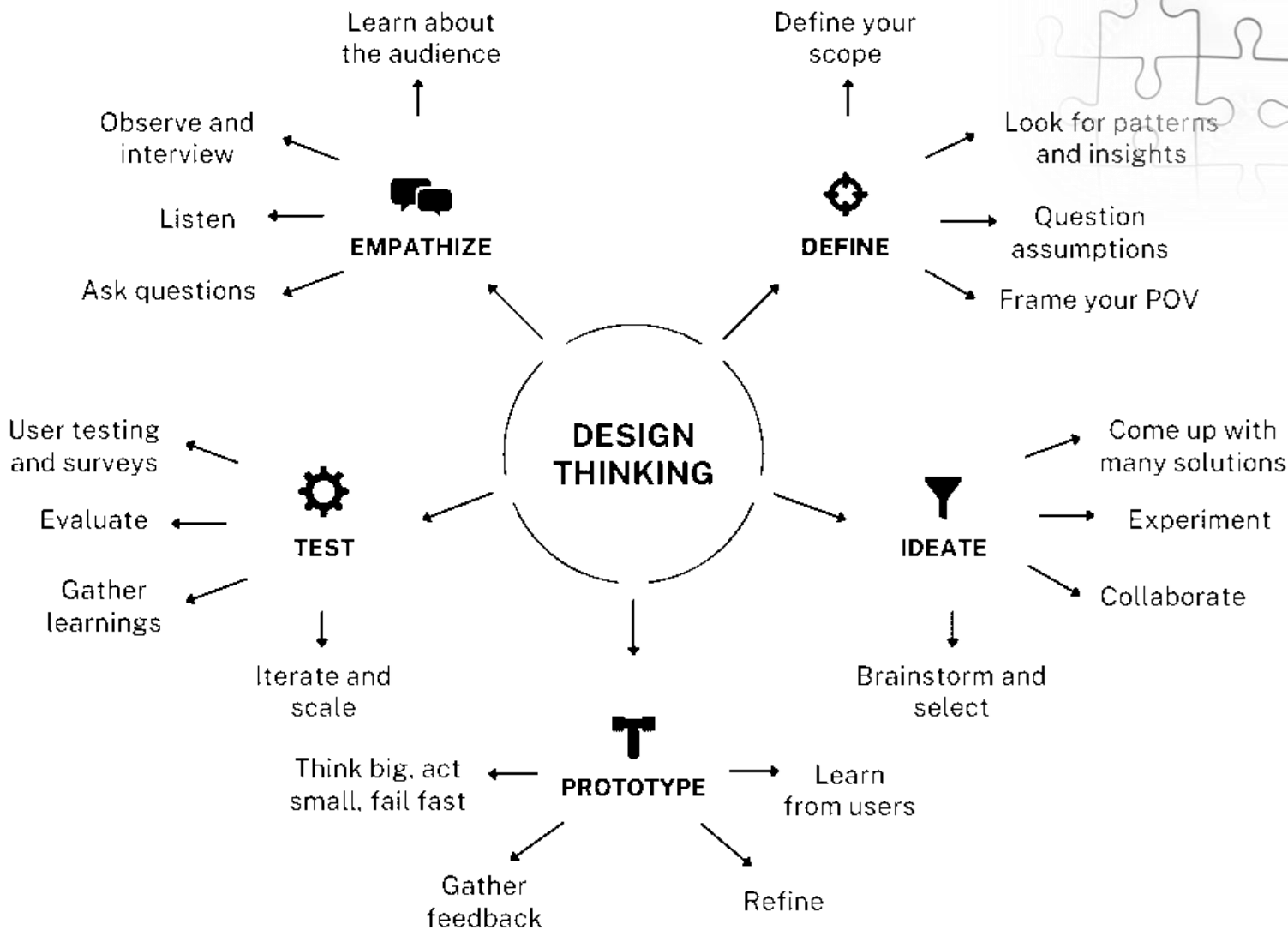
Try to find a new unavailable path is way of lateral thinking.

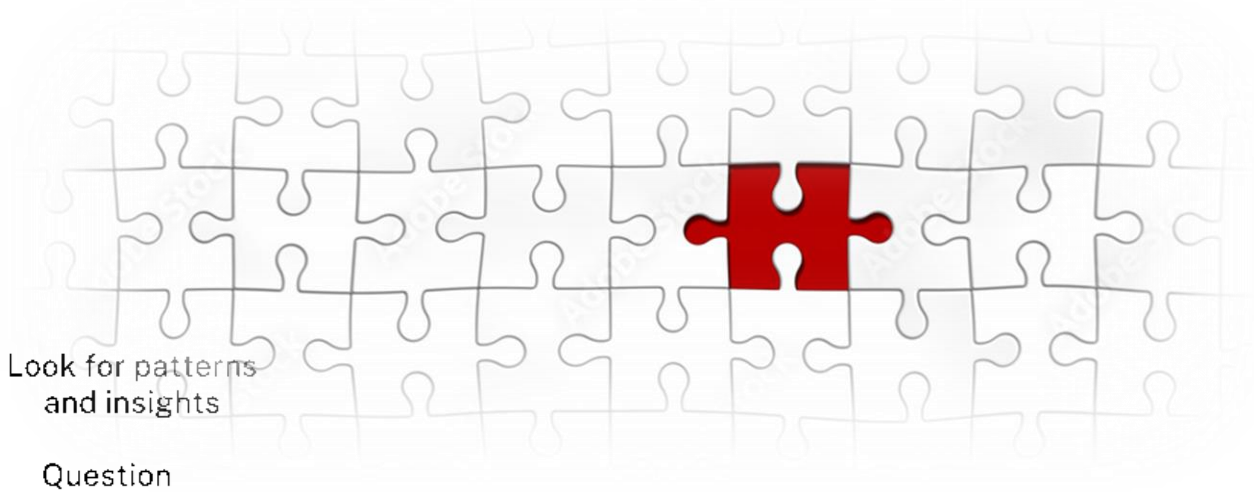






Lateral thinking is one family with other similar ways of thinking


DESIGN THINKING
EMPATHIZE
Learn about the audience
Observe and interview
Listen
Ask questions
DEFINE
Define your scope
Look for patterns and insights
Question assumptions
Frame your POV
IDEATE
Come up with many solutions
Experiment
Collaborate
Brainstorm and select
PROTOTYPE
Think big, act small, fail fast
Learn from users
Gather feedback
Refine
TEST
User testing and surveys
Evaluate
Gather learnings
Iterate and scale



What do you see?

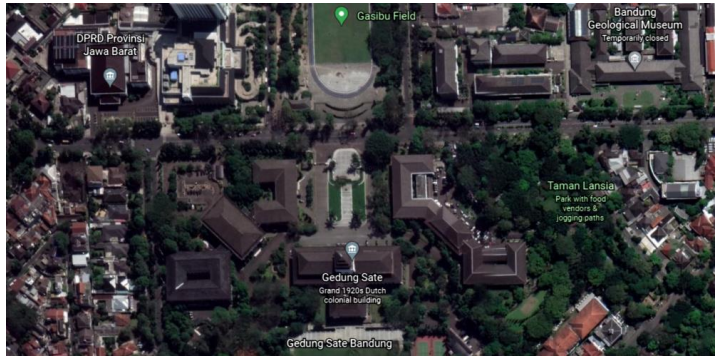
What do you see?

What do you see?

Can you see Bandung?
Does earth look spherical?

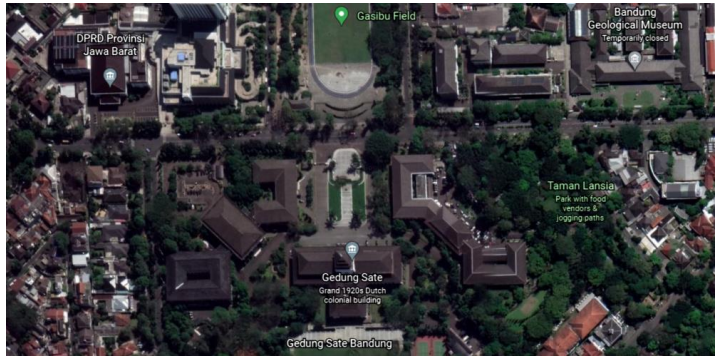
Can you see Bandung now?
What if “Gedung Sate”?
Does earth still look spherical?

Can you see “Gedung sate”?
Can you see the Bandung city itself?



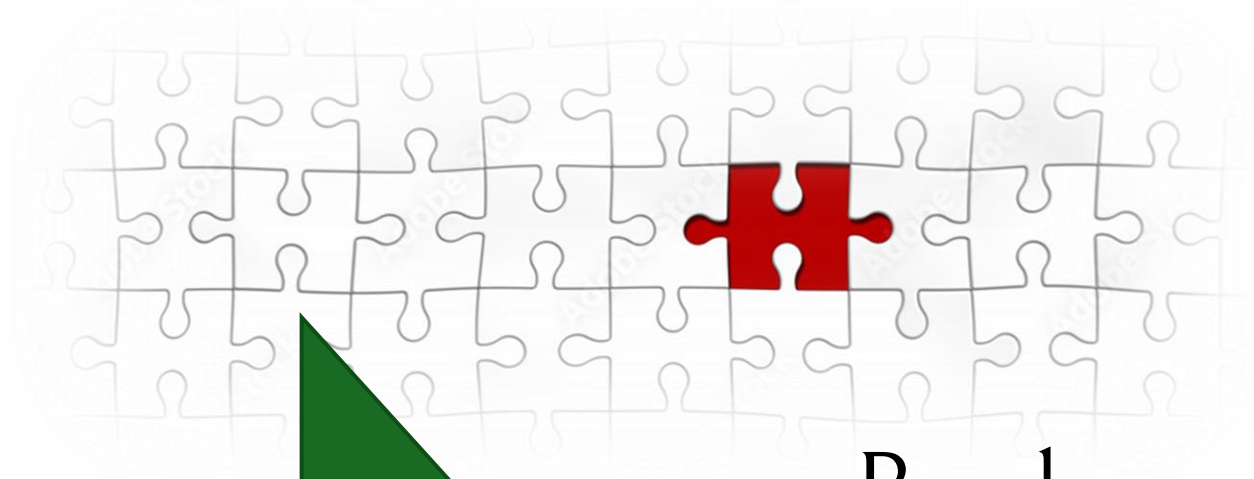
Kontekstual, holistic, *eagle view*, abstrak

Tekstual, rinci, particular, *frogview*, konkrit

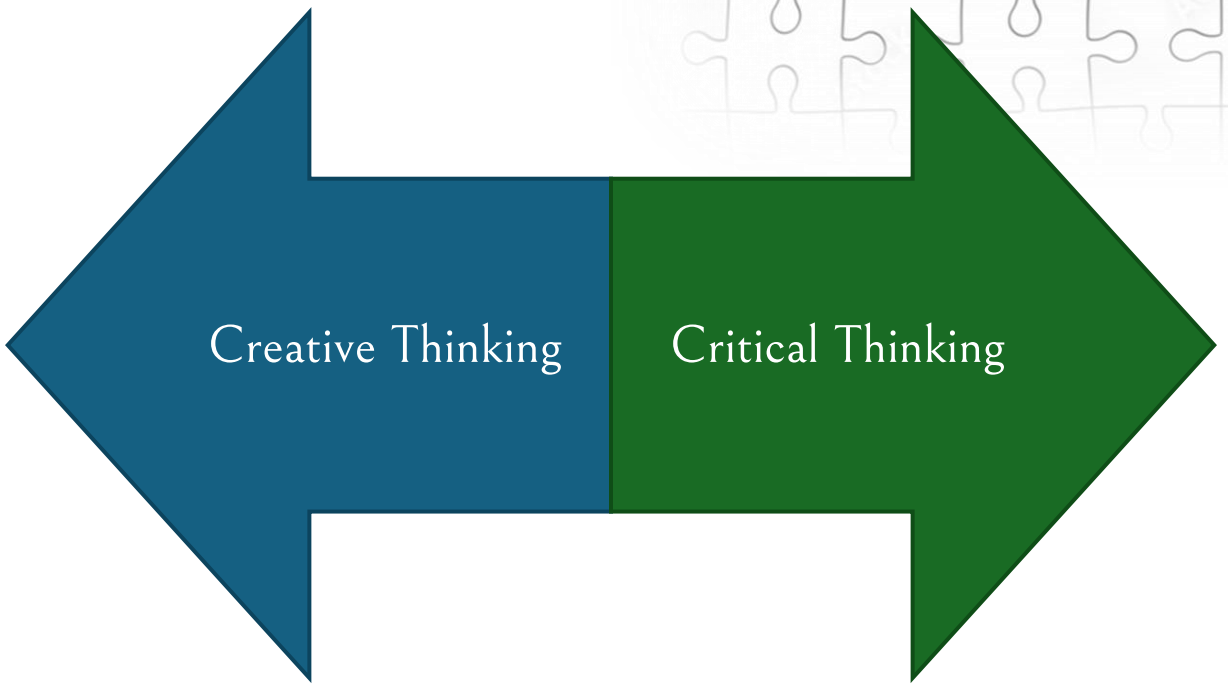


"Creative"

"Critical"



- Create
- Ideate



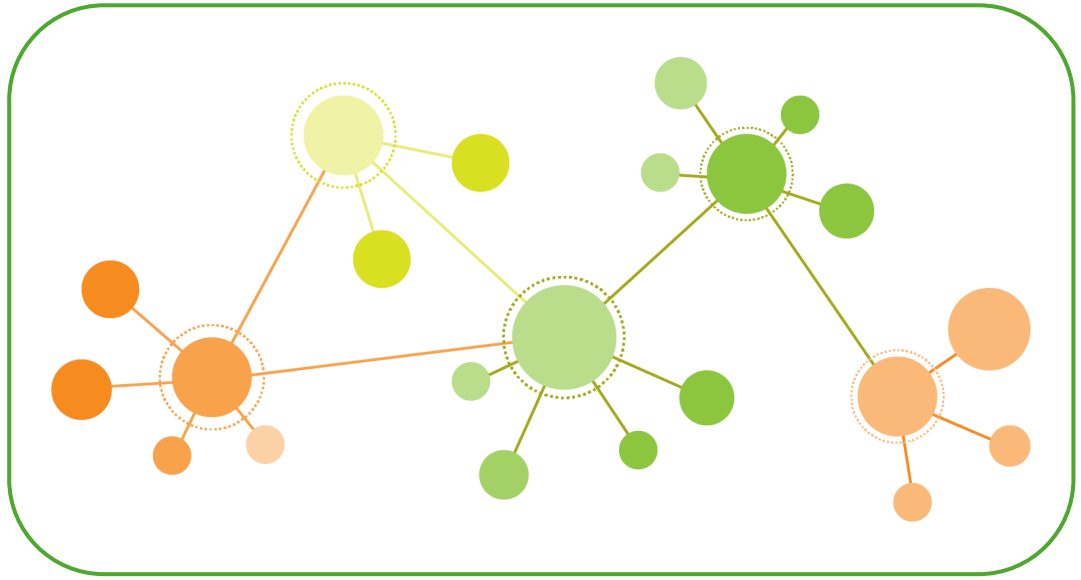
- Break Down
- Conclude

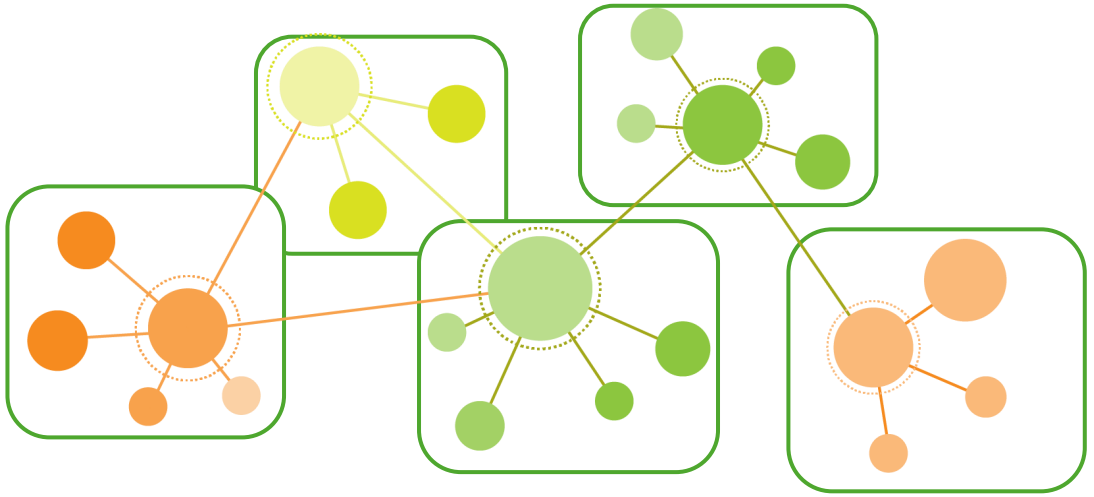
Creative Thinking

Critical Thinking

Synthesis, organismic-holistic, connecting, building, creating, uniting, divergent

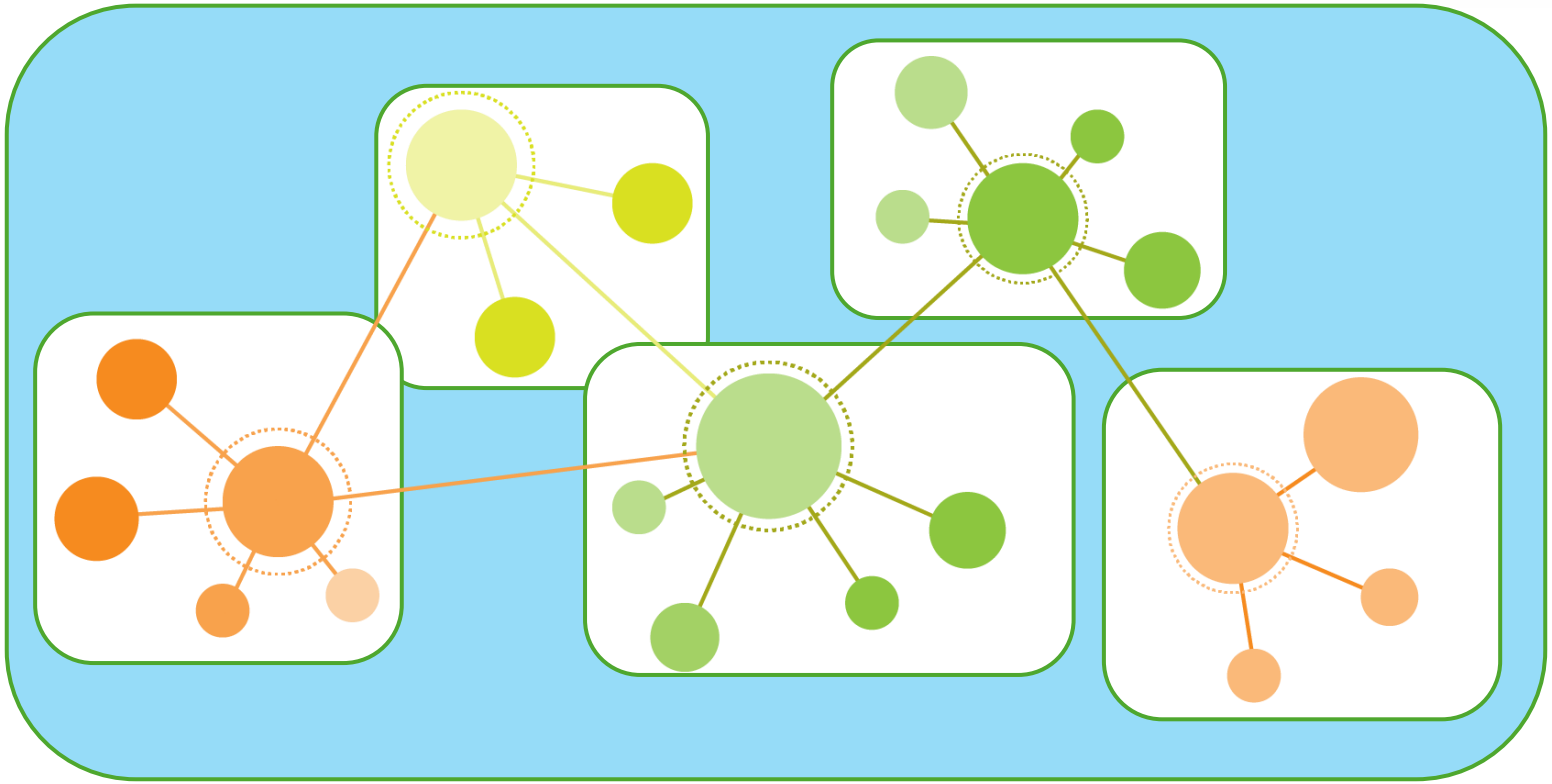
Analysis, mechanistic, sorting, breaking down, detailing, examining, dismantling, grouping convergent



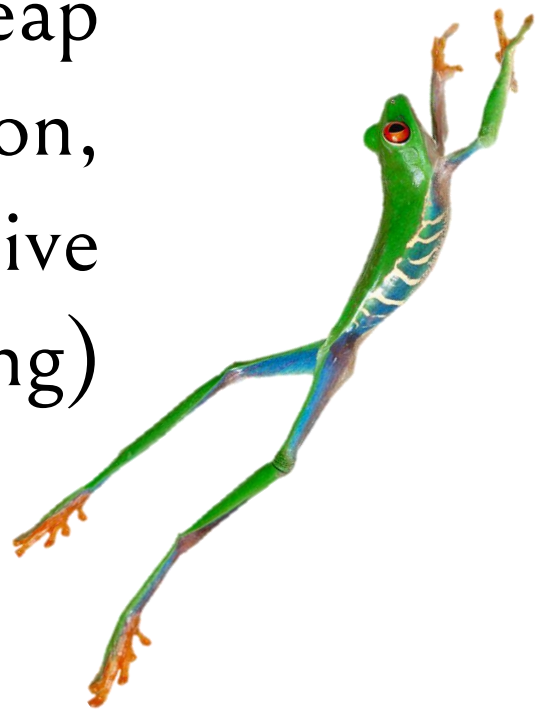


Thinking

Thinking simultaneously holistic AND in details.



Frog Leap (Intuition, creative thinking)

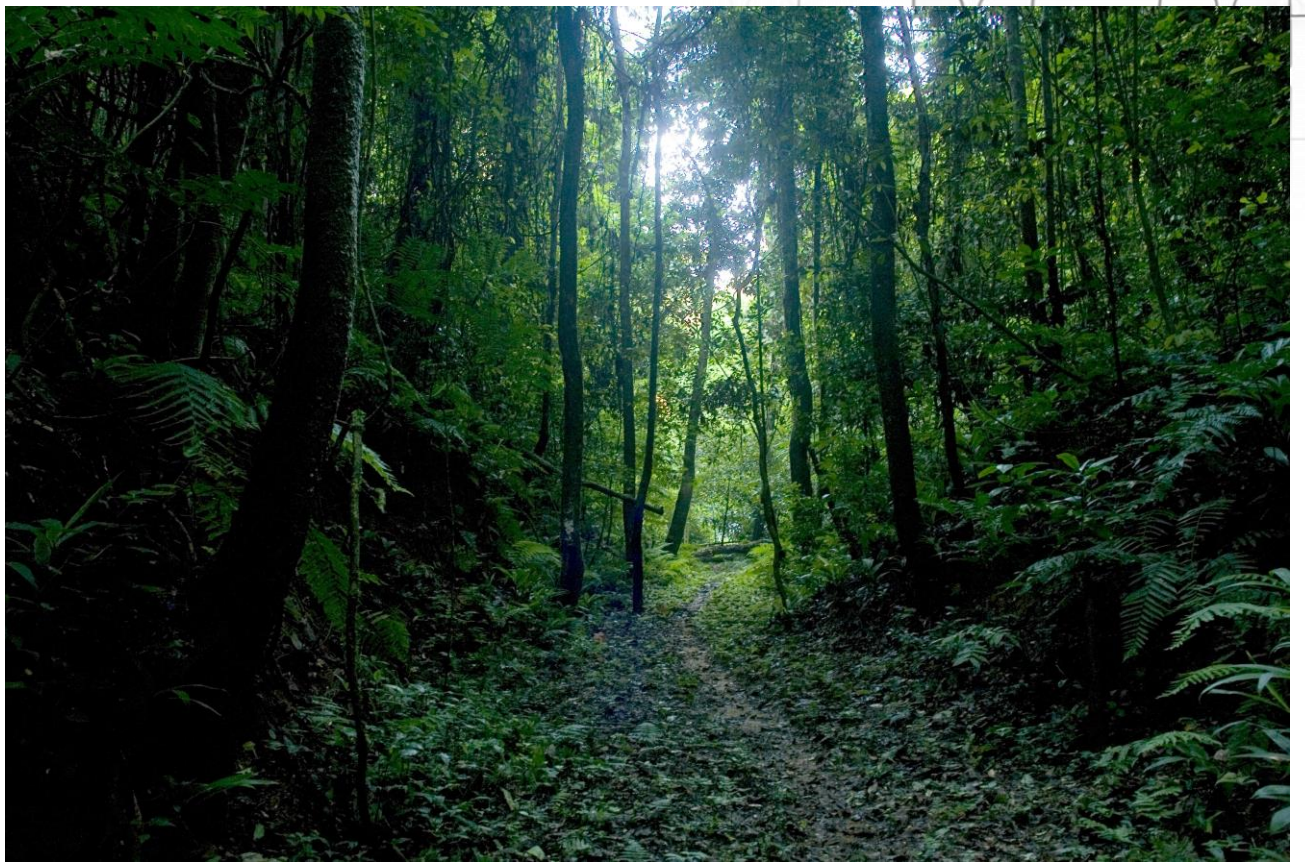


General idea

Deduction & Analysis (logic, critical thinking)

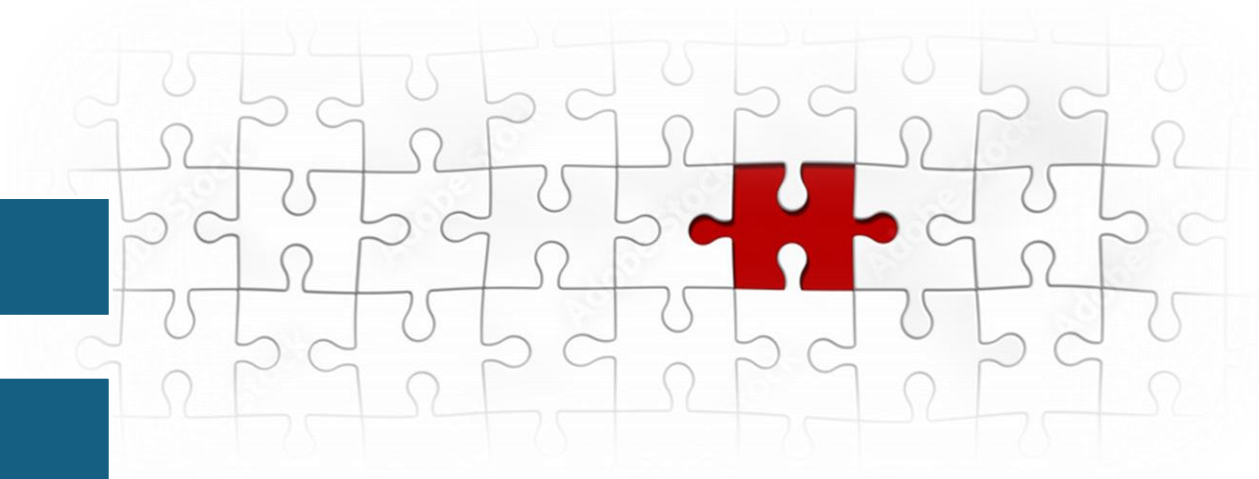
Detailed Concept

Vertical thinker (critical) needs to learn to “turn” to have a more holistic map.

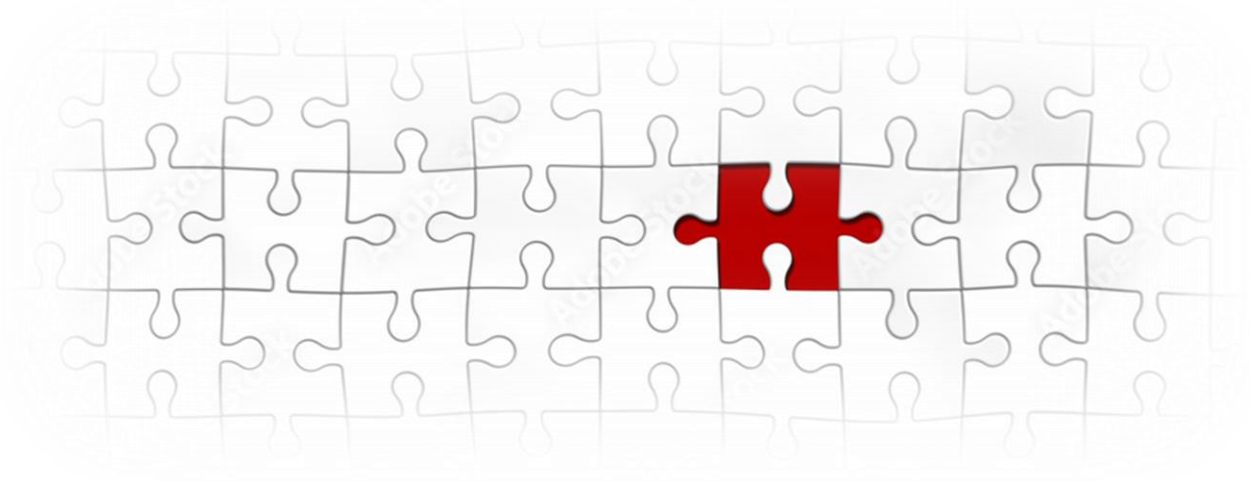


Creative thinker needs to learn to be “straight” to have a more directed conclusion.

- Thought experiment / What-if
- Abstraction dan Analogy
- Change of activity / environment
- Aleatori technique (random entry)
- External stimuli
- Silent

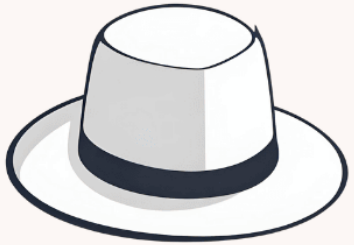


Core of creative/lateral thinking is the art of finding the alternatives



How to do it?

The six thinking hats



The white hat

Data, facts & information

What we know, and what we ought to find out

The blue hat

Manages the process

Listens, directs attention, integrates, moves forward

The yellow hat

Sunshine & positivity

Optimism, possibilities, upsides, potential

The red hat

Feelings, reactions + vibes

How we feel: gut instincts honest emotions, intuition

The black hat

Caution & skepticism

Dangers, threats, risks, drawbacks, worst-case scenarios

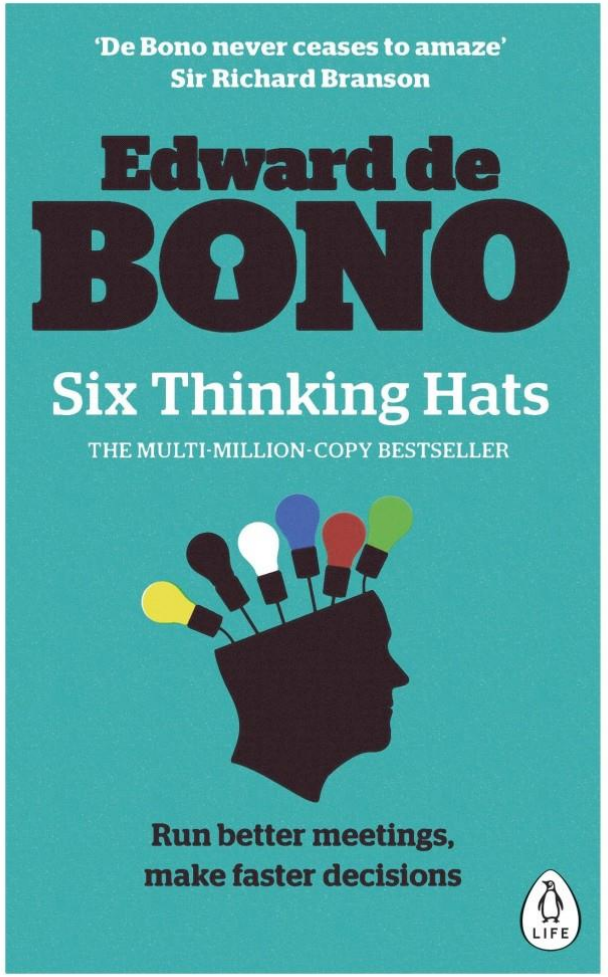
The green hat

Creativity & surprise

Alternatives, reframing, out-of-the-box ideas, what-ifs

A concept by Edward de Bono, 1985.

BiteSize Learning



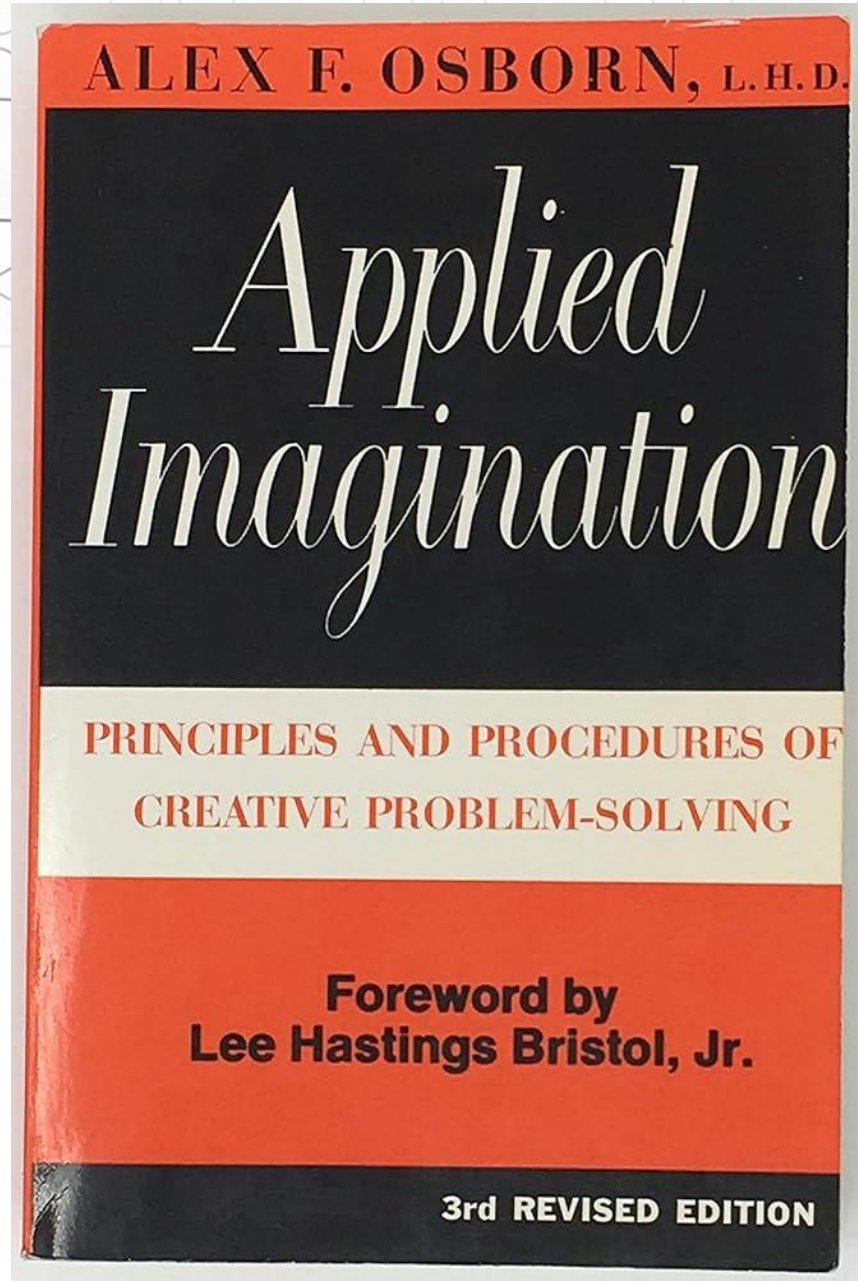
Brainstorming

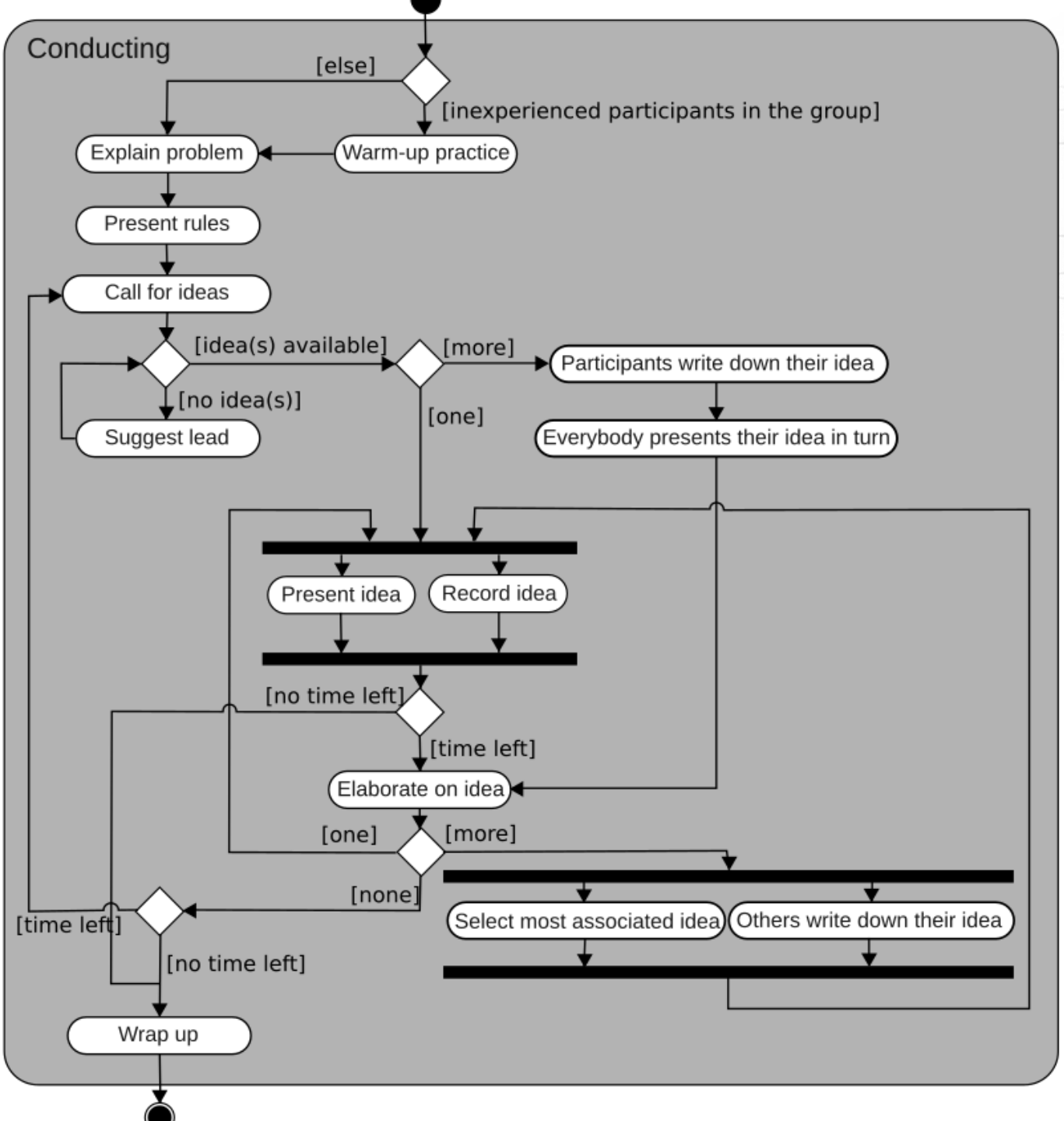
Popularized by Alex Osborn (1953)

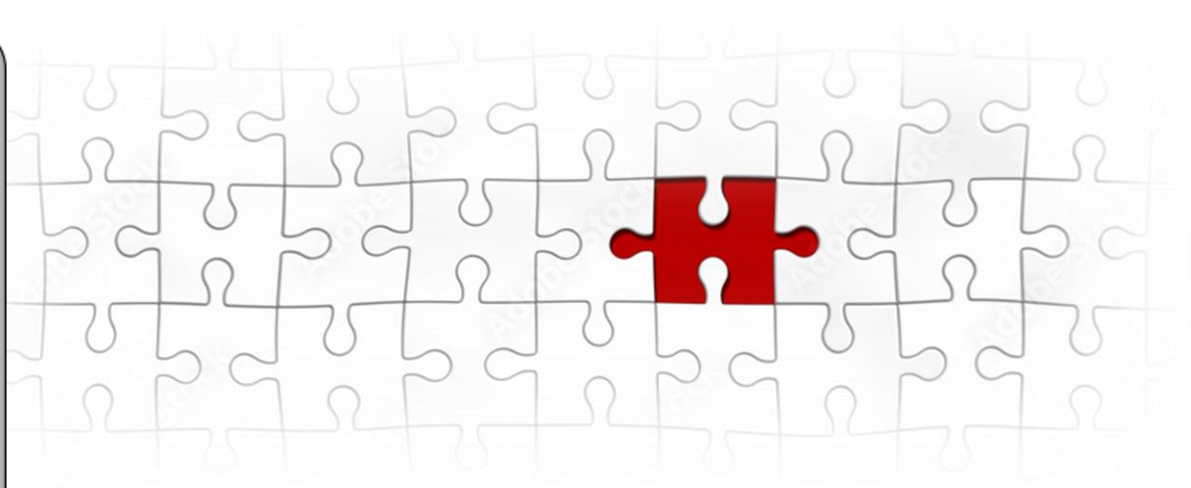
Focus on volume and variety of ideas

"It is easier to tone down a wild idea than to think up a new one."

— Alex Osborn



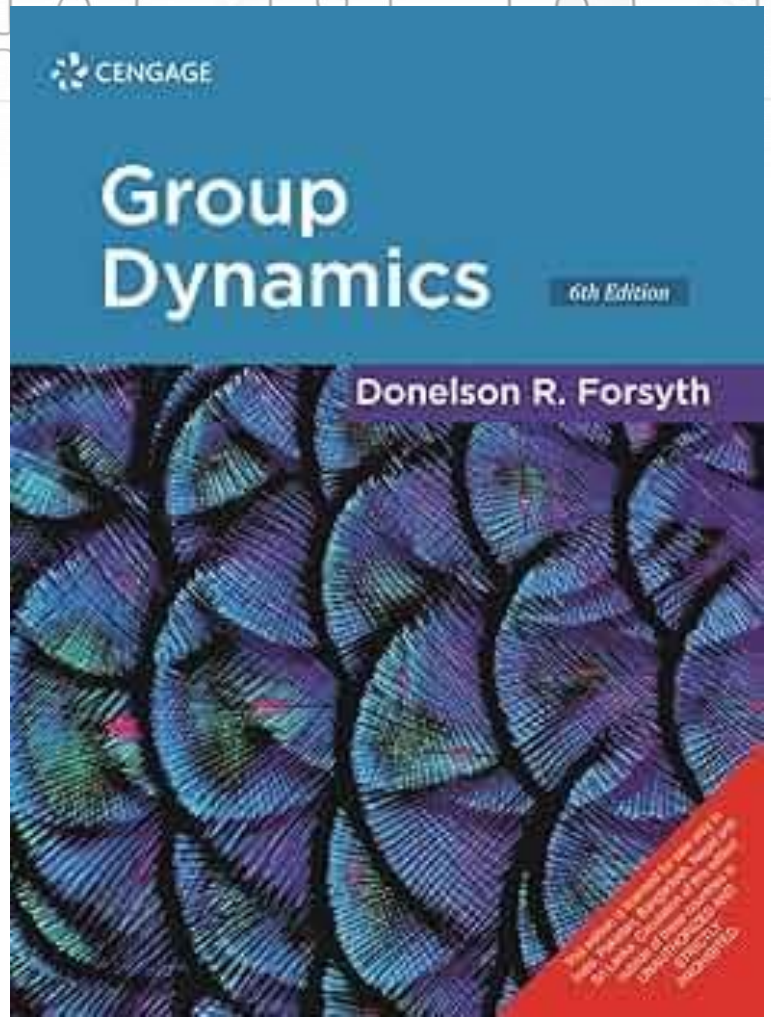




- Go for quantity
- Withhold criticism
- Welcome wild ideas
- Combine and improve ideas

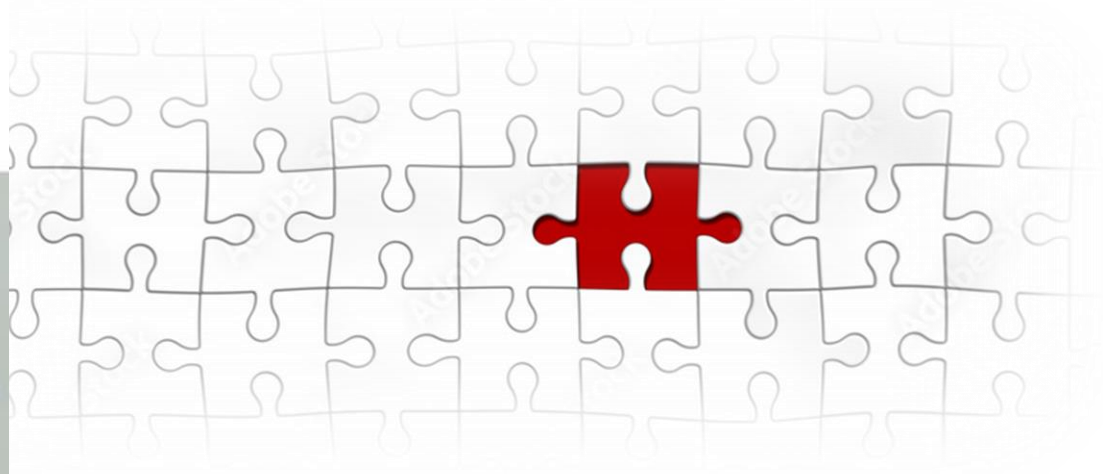
Groups Dynamics for Brainstorming

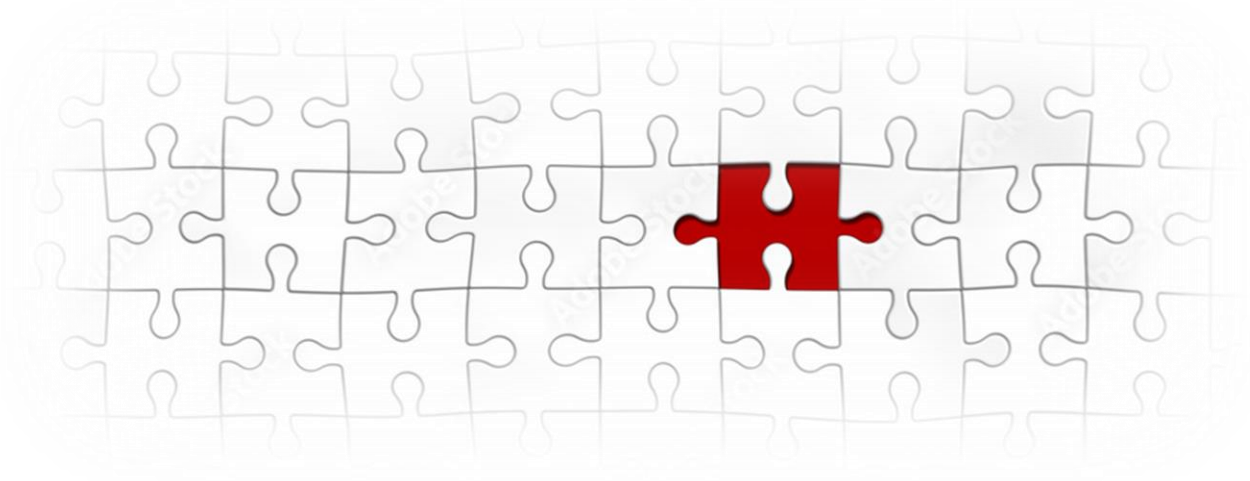
- Avoid face-to-face groups
- Stick to the rules
- Pay attention to everyone's ideas
- Include both individual and group approaches
- Take breaks
- Do not rush
- Stay persistent.
- Facilitate the session



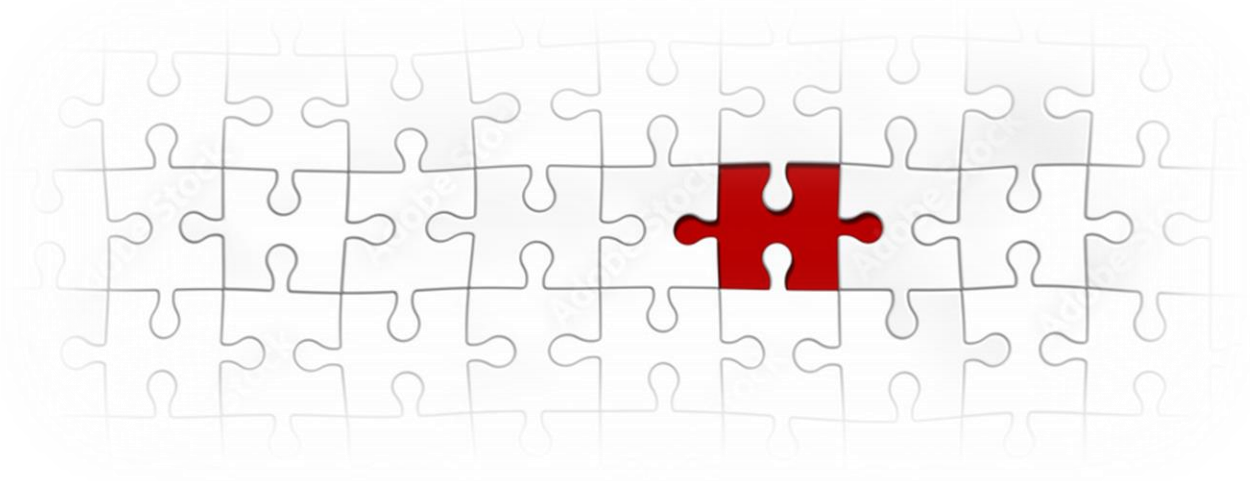
How IKEA was Invented

- All right guys, we need some ideas.

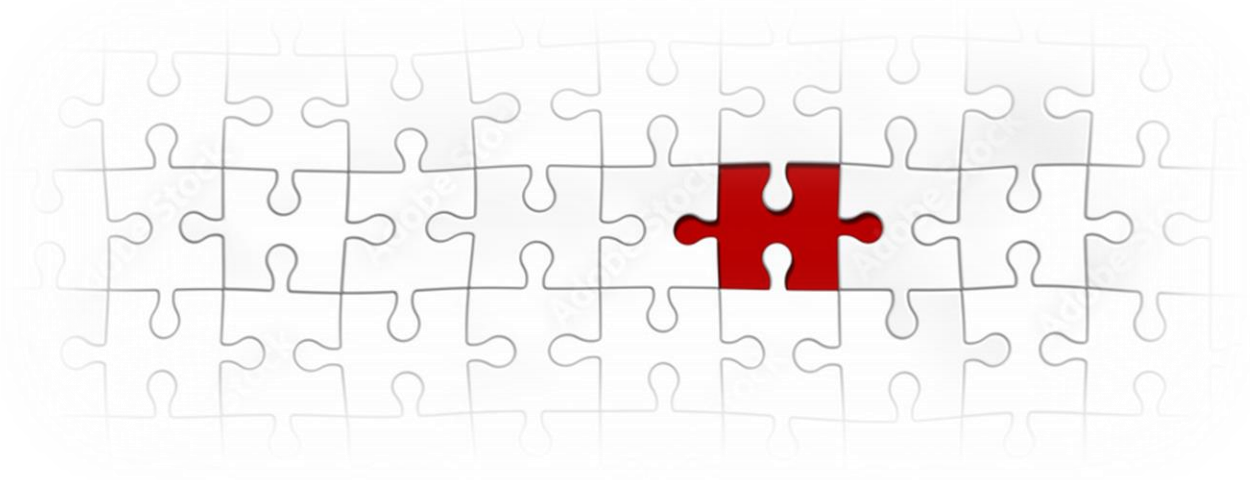


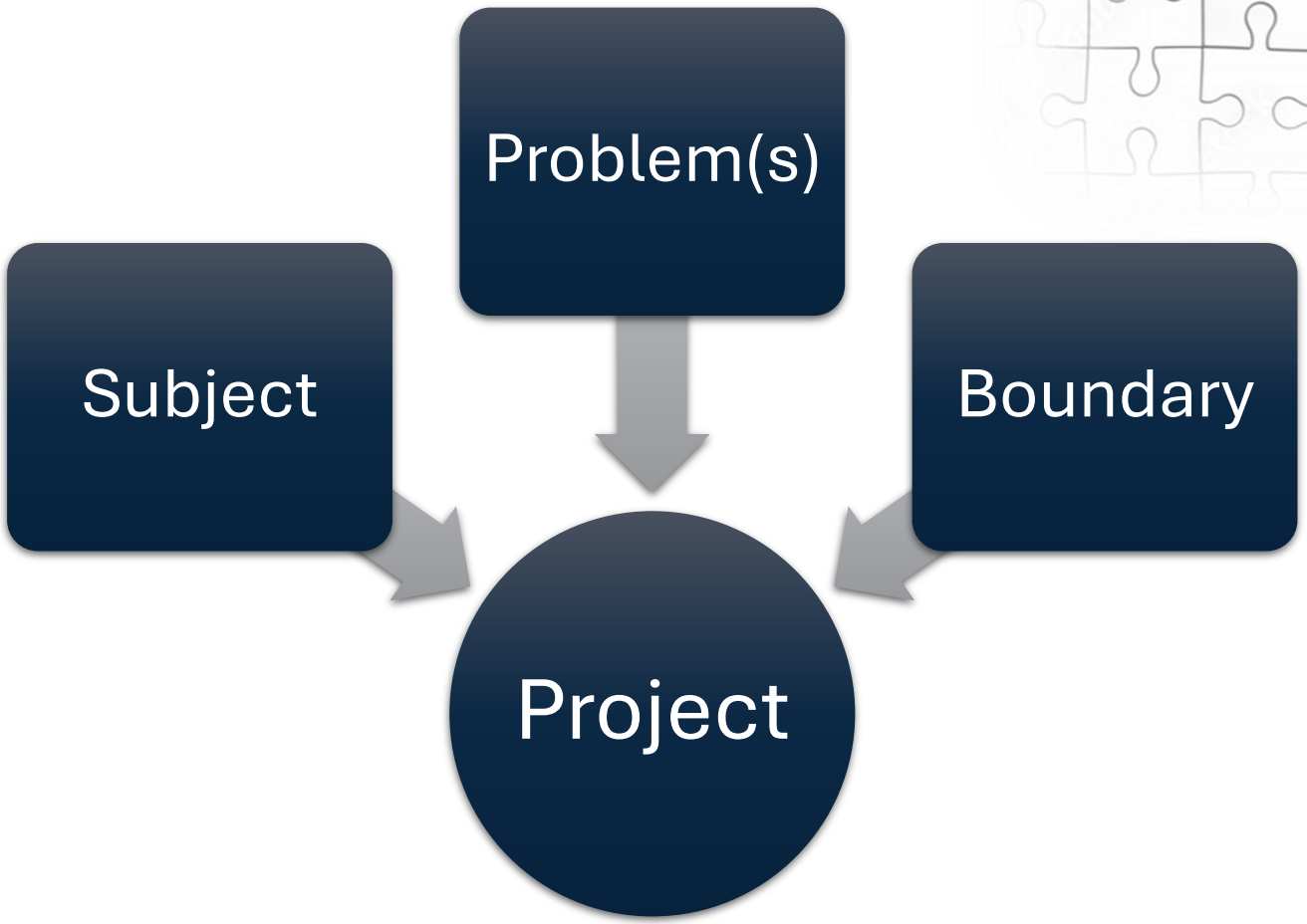


How to implement?

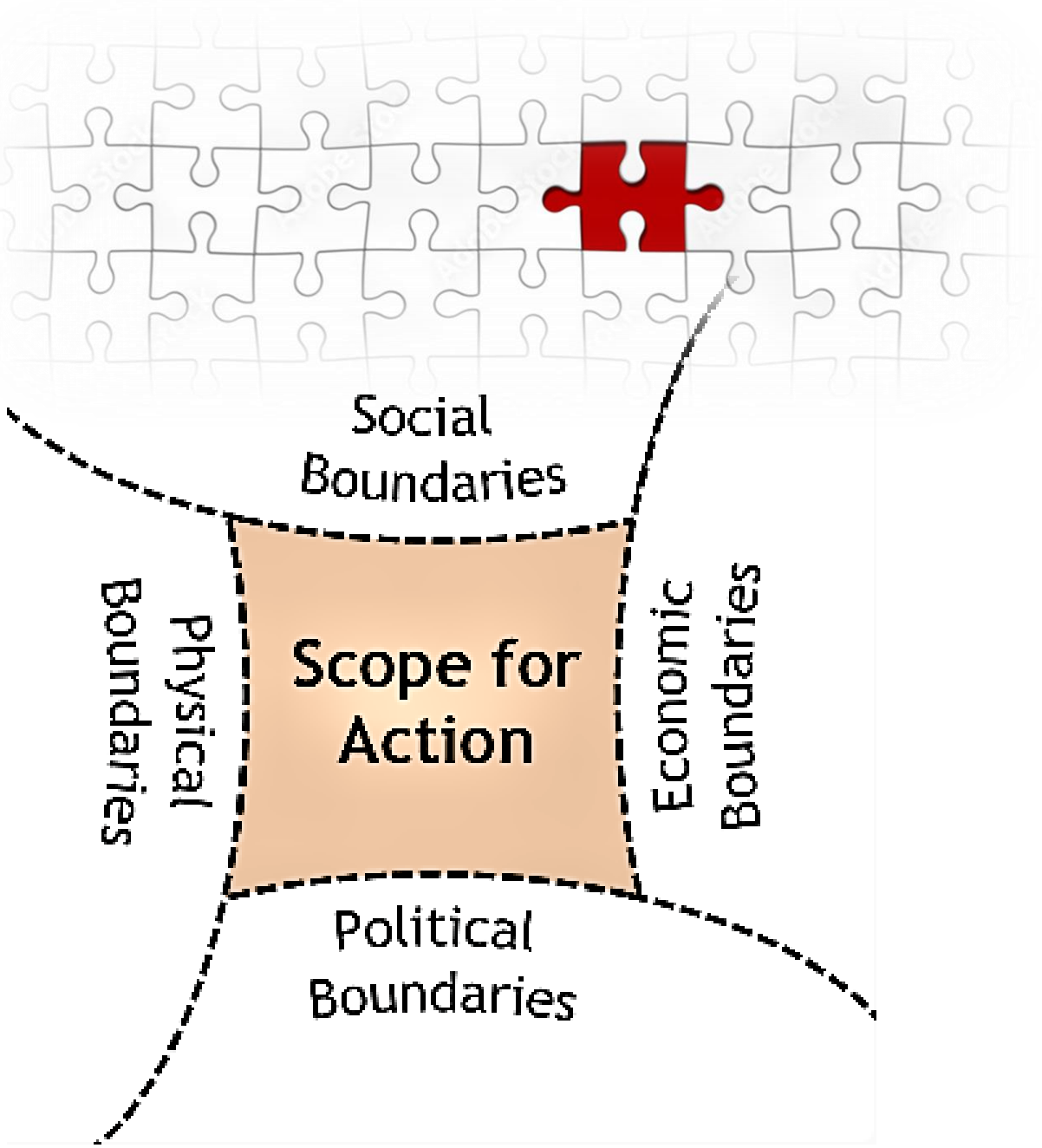


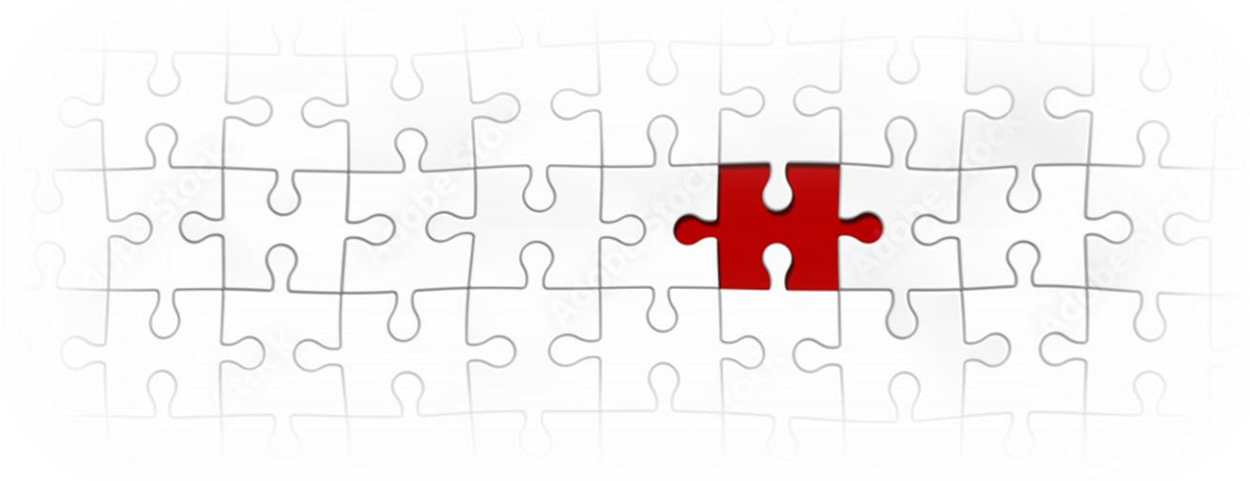
"Give me six hours to chop down a tree and I will spend the first four sharpening the axe"



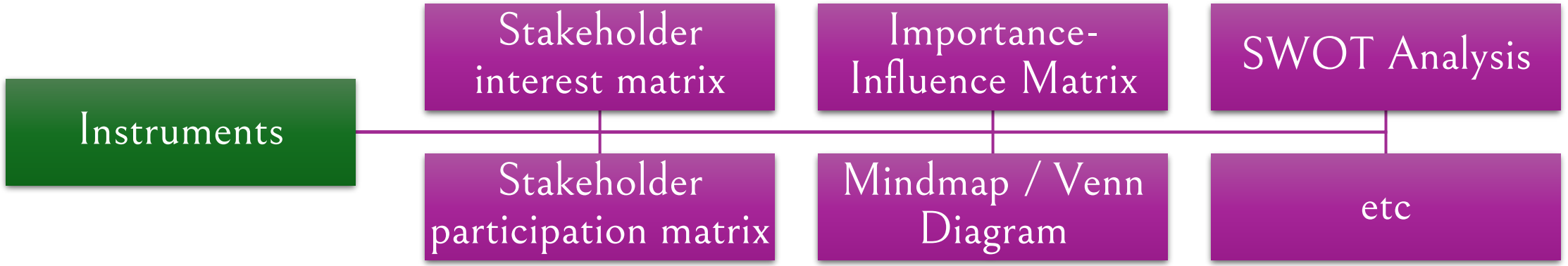

Problem(s)
Subject
Boundary
Project

Defining boundary: focusing action





Stakeholder Analysis



Stakeholder Interest Matrix

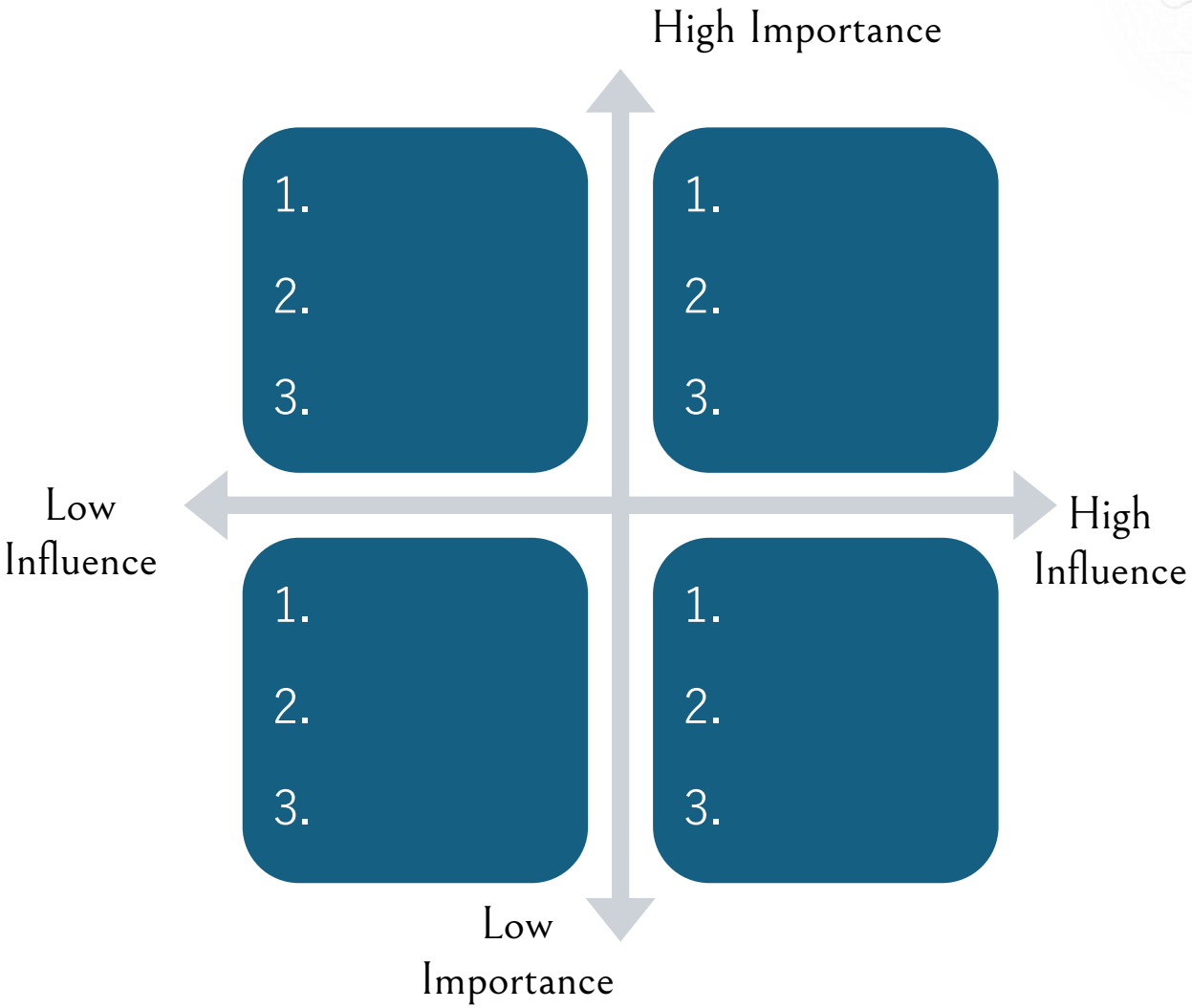
Stakeholder	Problems	Interests	Potential

Stakeholder	Importance	Influence and Power	Interests	Concerns

Stakeholder Participation Matrix

Type of participation / Cycle stage	Inform	Consult	Collaborate / Partnership	Empower / Control
Identification				
Planning				
Implementation				
MonEv				

Importance-Influence Matrix

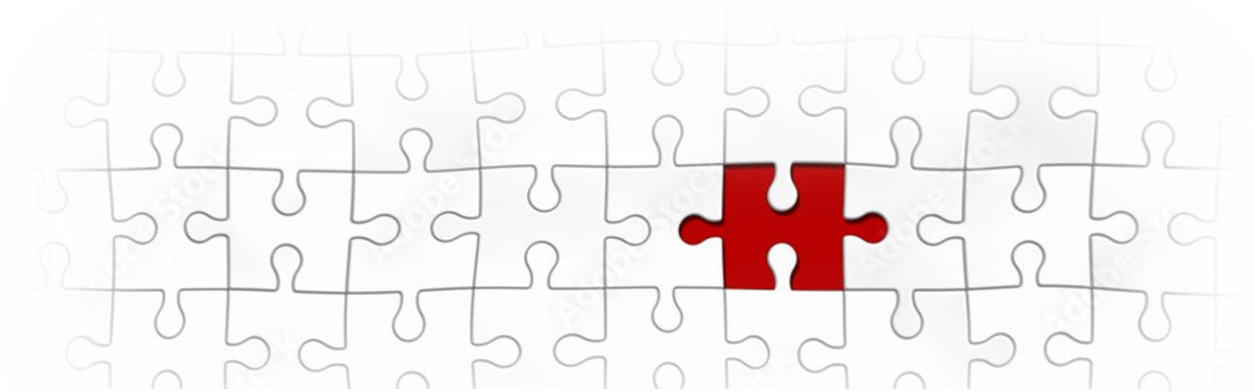


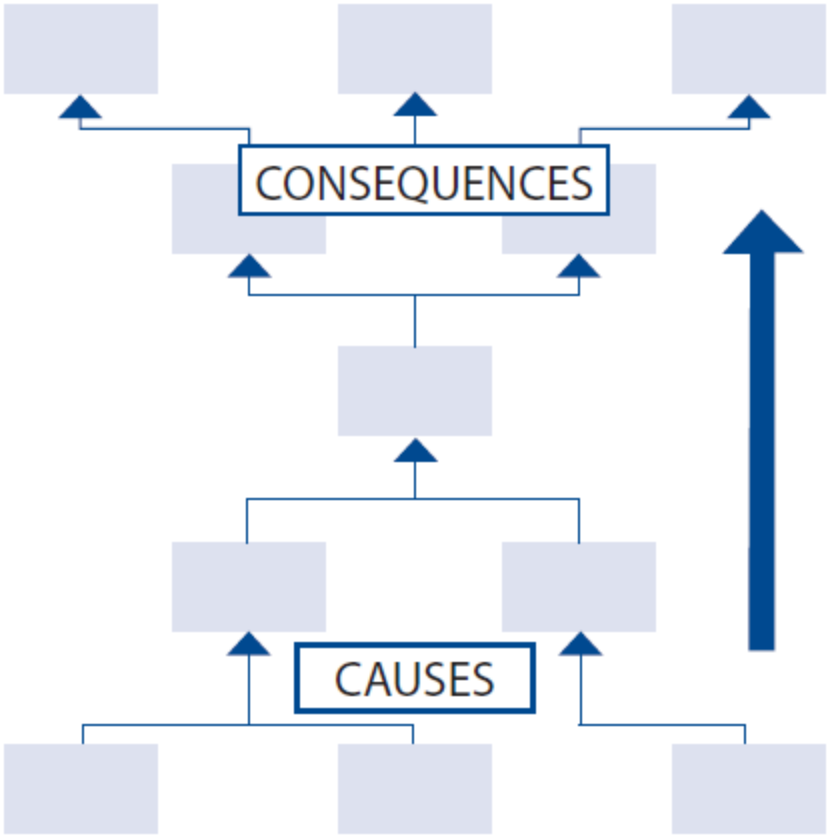
SWOT Matrix

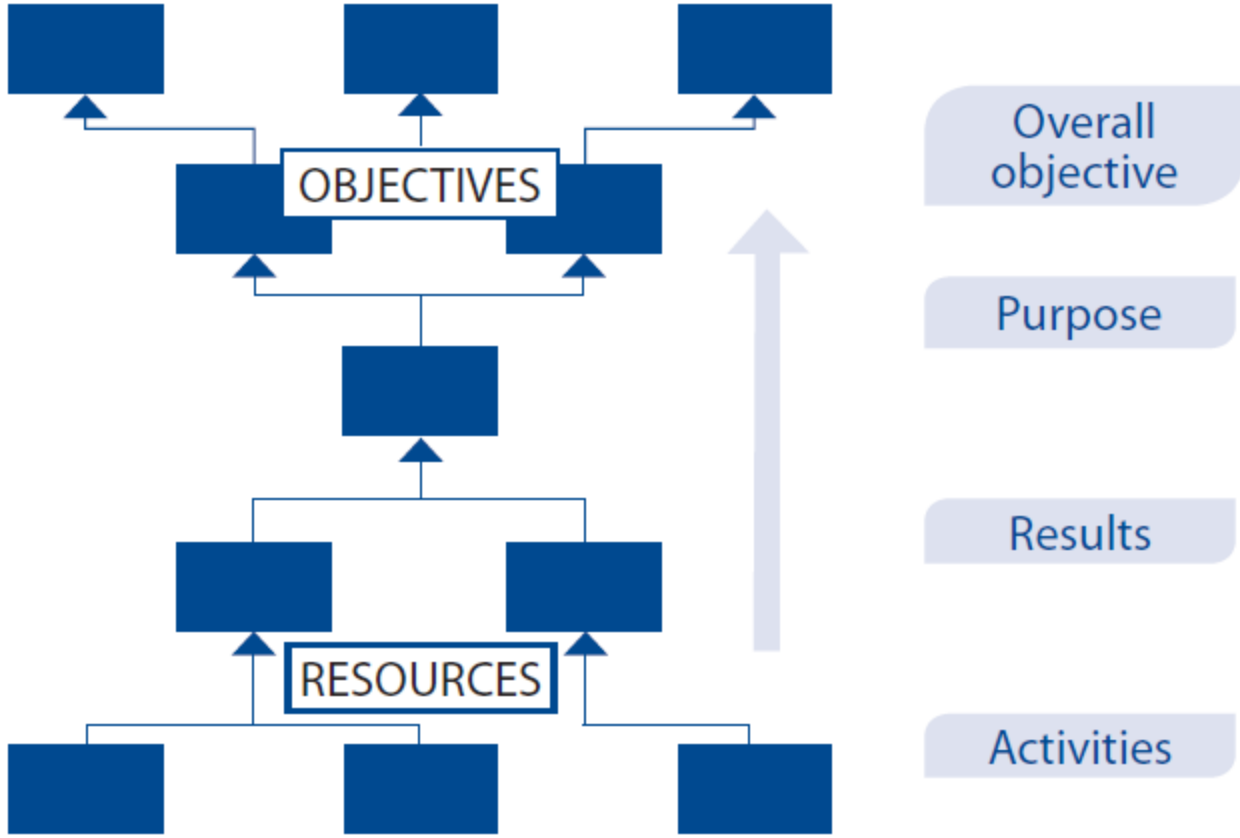
Example

Stakeholder and basic characteristics	Problems (How affected by the problem(s)	Interests (and possible actions to address it)	Potential (Capacity and motivation to bring about change)
Fishing families: X families, low income earners, small scale family businesses, organised into informal cooperatives, women actively involved in fish processing and marketing	Pollution is affecting volume and quality of catch Family health is suffering, particularly children and mothers	Maintain and improve their means of livelihood Support capacity to organise and lobby Implement industry pollution control measures	Limited political Influence given weak organisational structure Keen interest in pollution control measures
Industry X: Large scale industrial operation, poorly regulated and no unions, influential lobby group, poor environmental record	Some concern about public image Concern about costs if Environmental regulations enforced	Maintain/increase profits Raise their awareness of social and environmental impact Mobilise political pressure to influence industry behaviour Strengthen and enforce environmental laws	Have financial and technical resources to employ new cleaner technologies Limited current motivation to change
Households: X households discharge waste and waste water into river, also source some drinking water and eat fish from the river	Aware of industrial pollution and impact on water quality Health risks	Want access to clean water Want to dispose of own waste away from the household	Potential to lobby government bodies more effectively Appear willing to pay for improved waste management services Limited understanding of the health impact of their own waste/ waste water disposal
Local government Etc.			

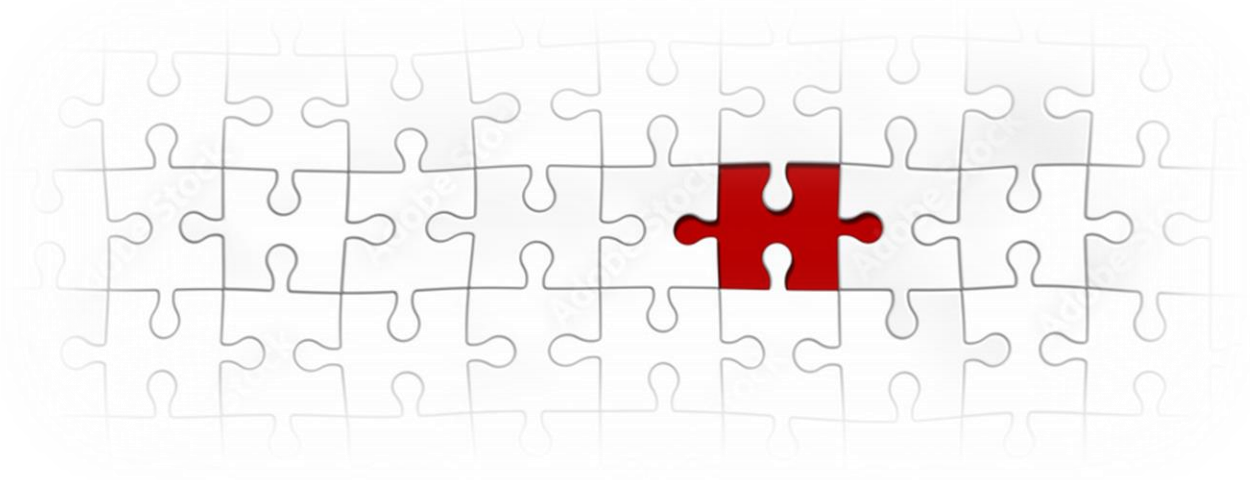
Formulating Objective



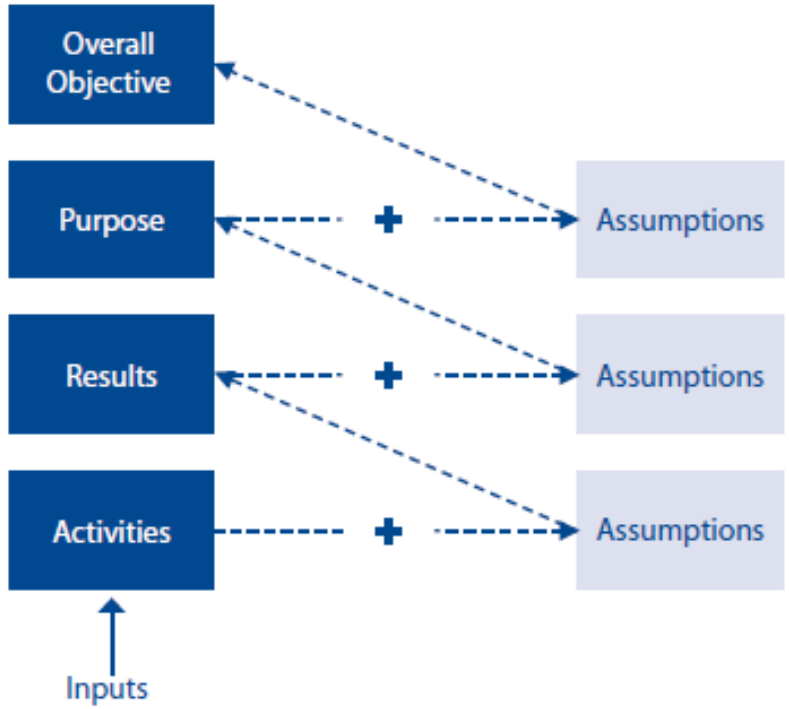




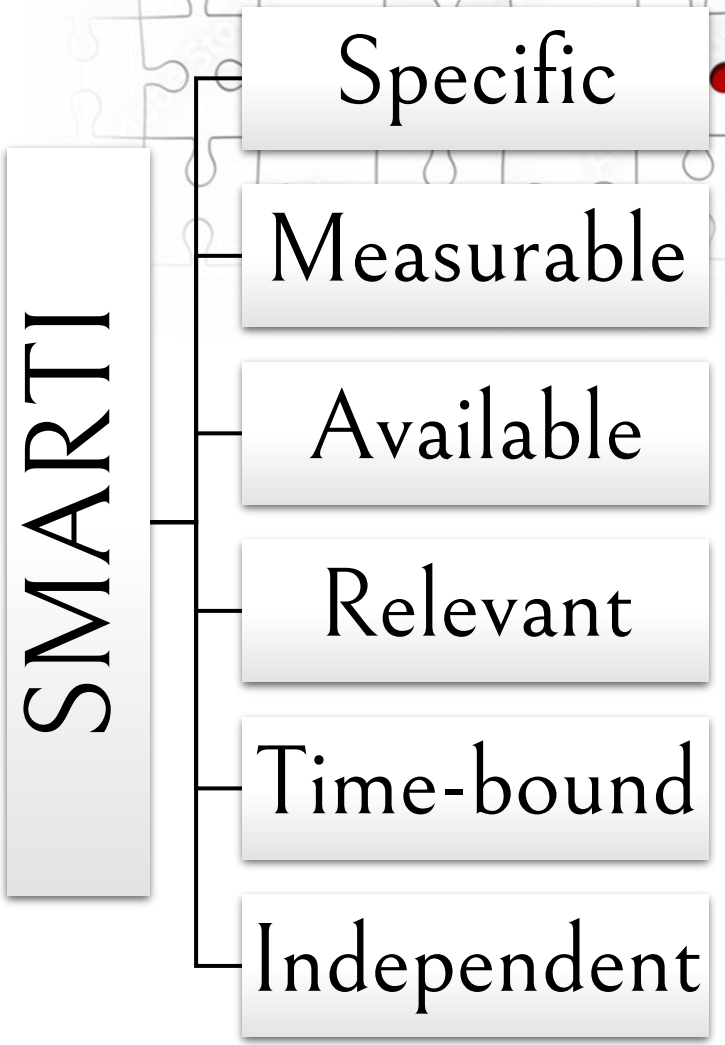
Formulating Plan (LogFrame Matrix)



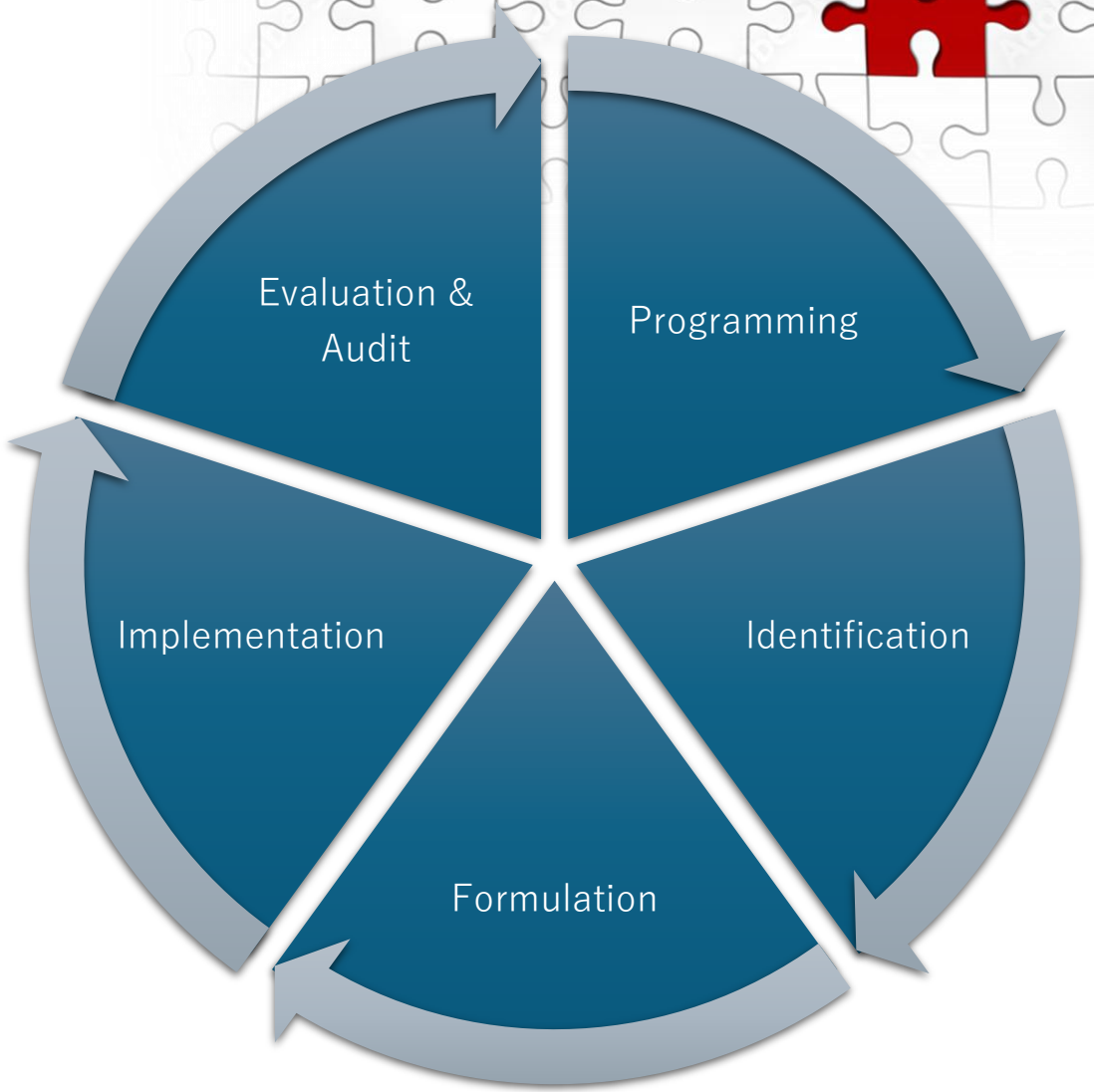
Logic of intervention	Objectively Verifiable Indicators	Sources of Verification	Assumptions
Overall Objective (1)	(10)	(11)	(9)
Purpose (2)	(12)	(13)	(8)
Results (3)	(14)	(15)	(7)
Activities (4)	Means (16)	Costs (17)	(6)
			Preconditions (5)



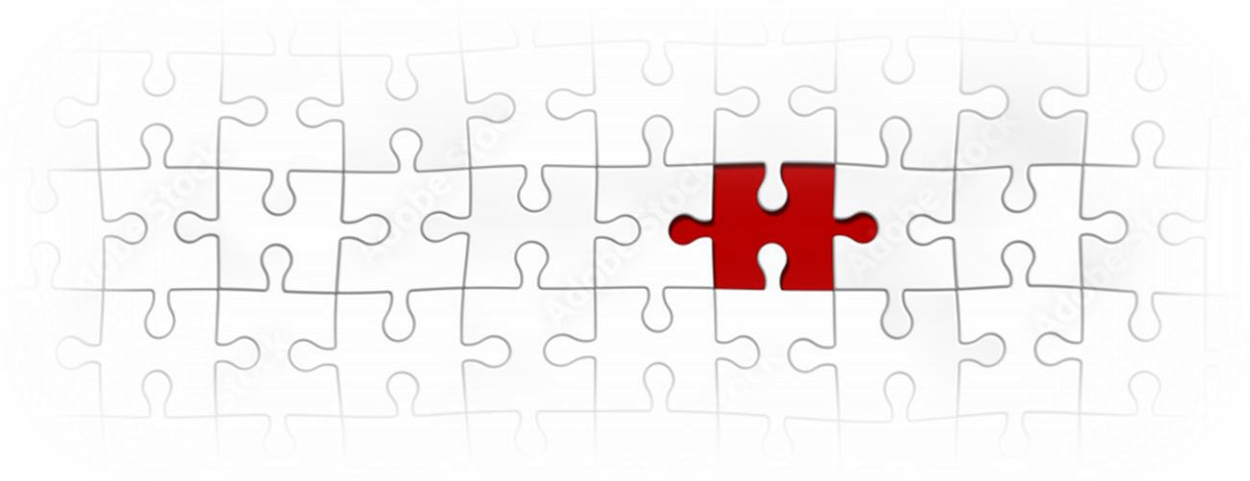
A good OVI (Objectively Verifiable Indicators) is SMARTI

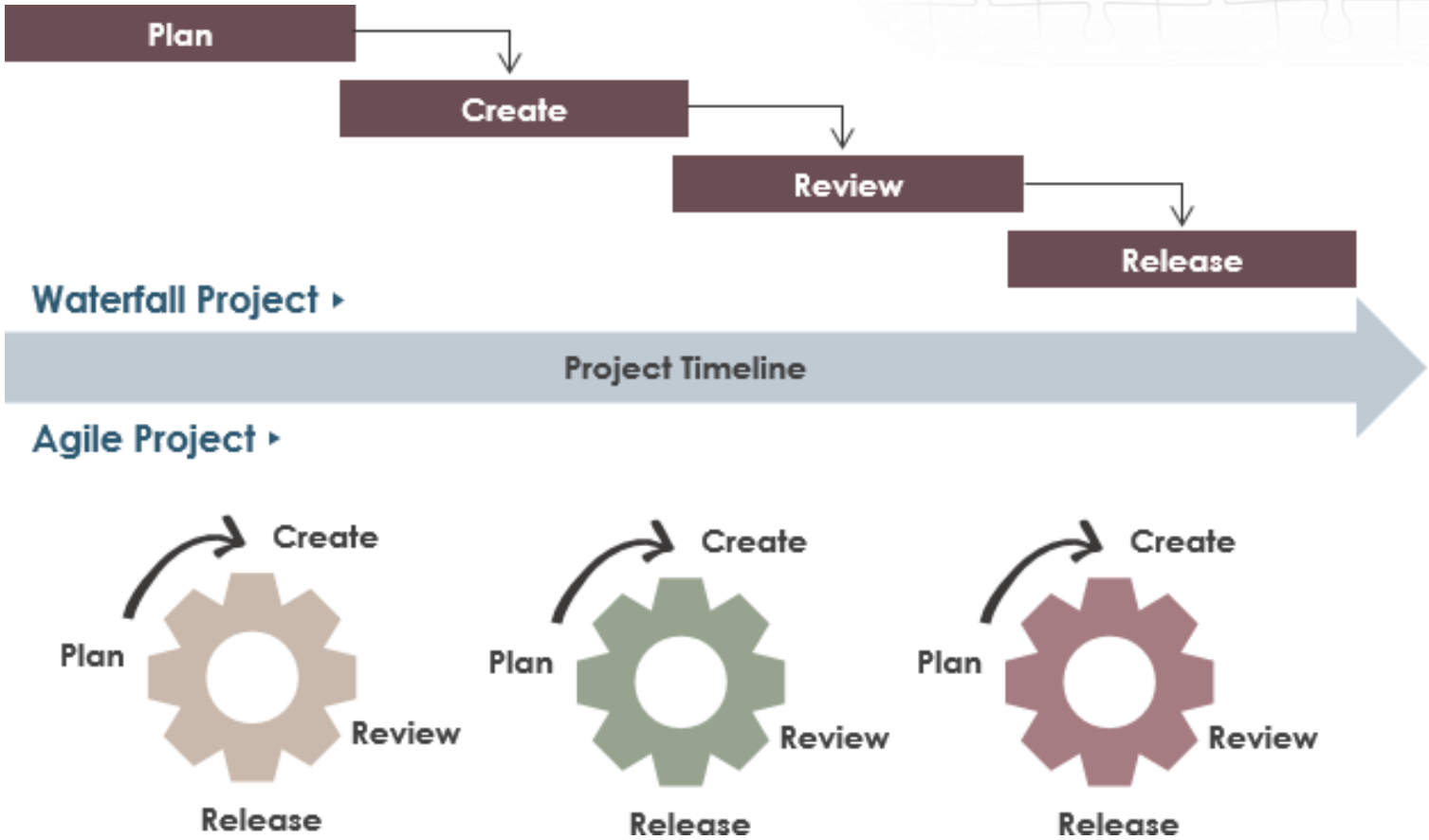


Project Cycle Management

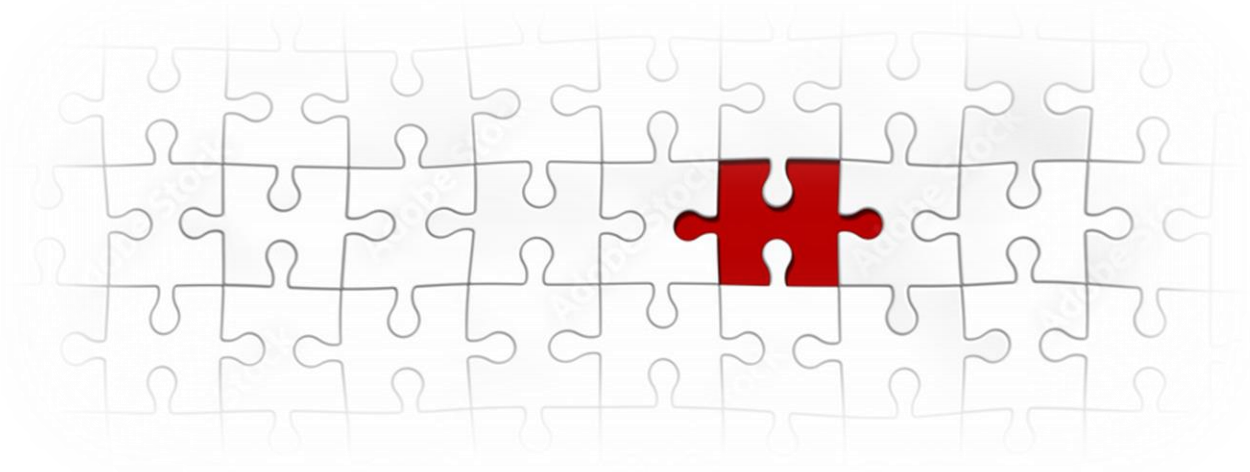


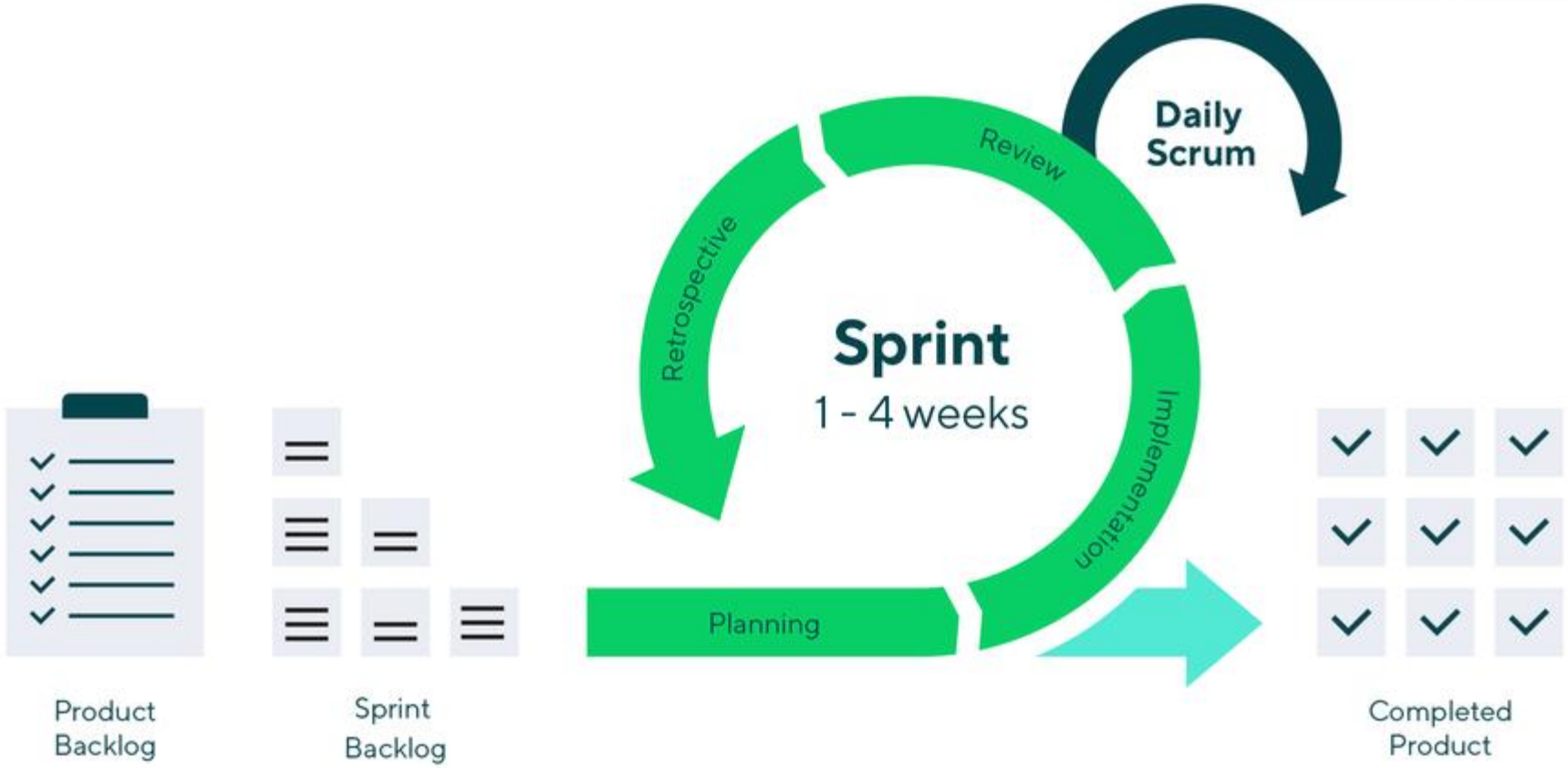
Be agile!

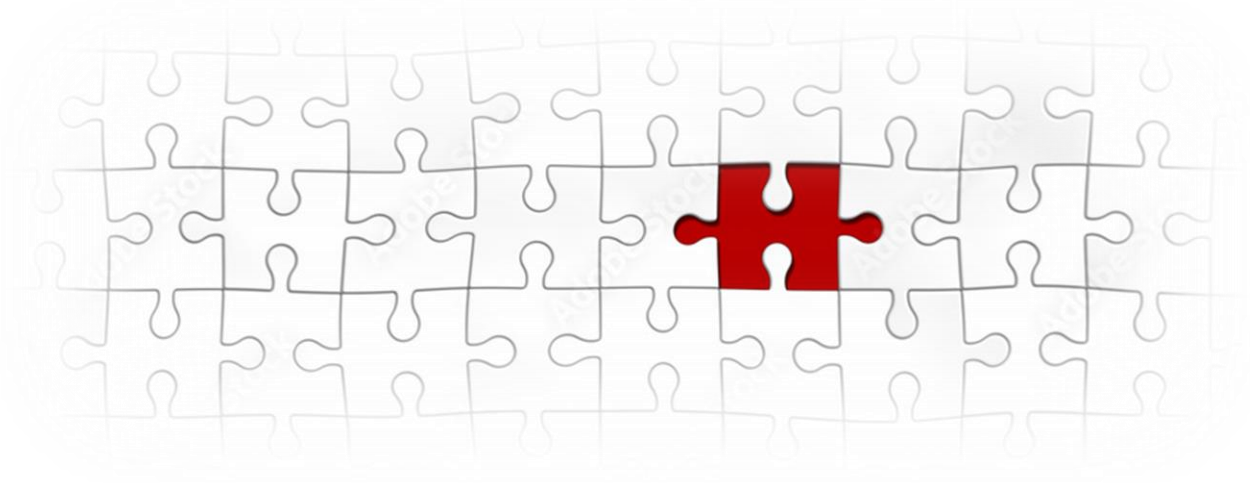



Plan
Create
Review
Release
Waterfall Project
Project Timeline
Agile Project
Create
Plan
Review
Release
Create
Plan
Review
Release
Create
Plan
Review
Release

Be agile!




Daily Scrum
Review
Retrospective
Sprint
1 - 4 weeks
Implementation
Planning
Product Backlog
Sprint Backlog
Completed Product



Let’s practice