

# การคิดเชิงวิเคราะห์และเชิงสังเคราะห์

หลักสูตรการเสริมสร้างสมรรถนะในการขับเคลื่อนงานสำหรับข้าราชการระดับชำนาญการพิเศษ  
รุ่นที่ 1 และ 2

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คณะพัฒนานักทรัพยากรมนุษย์ || สถาบันบัณฑิตพัฒนบริหารศาสตร์

sophistication  
modification  
friendship  
identity  
diversity  
chaos  
mess  
variety  
inclusion  
trust  
acceptance  
distrust  
complex  
simplicity  
complexity  
multiplication  
people  
sensitivity  
leader  
shift  
respect  
transfer  
transformation  
community  
difference  
interdependent  
diverse  
equality  
robust  
change  
interchange  
messiness  
organization

# Things We Are Facing Today

## Complexity

Stems from the nature of problems

Naturally comes together with other problems

Once you examine them, problems seem to get bigger

→ More issues and stakeholders

## Change

What we have to respond to constant shifts in the (organization) environment

Example of change

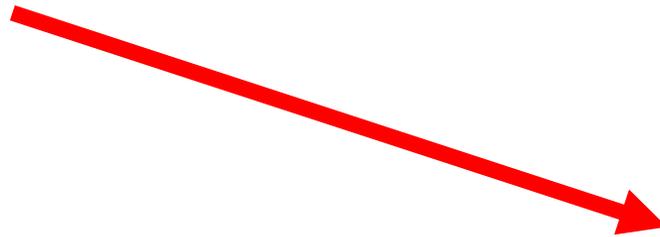
Customer change, Competition, Law and regulation, Society transformation

## Diversity

Result of complexity and change

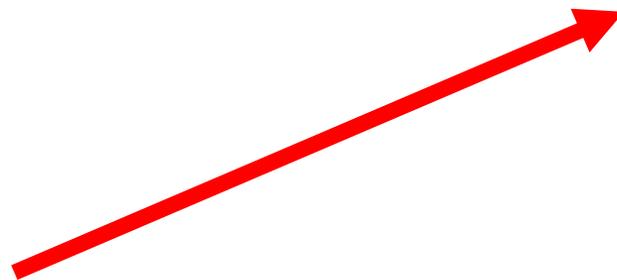
# The Complexity's Characterized Factors

Constant Change



Unpredictable

Course Corrections



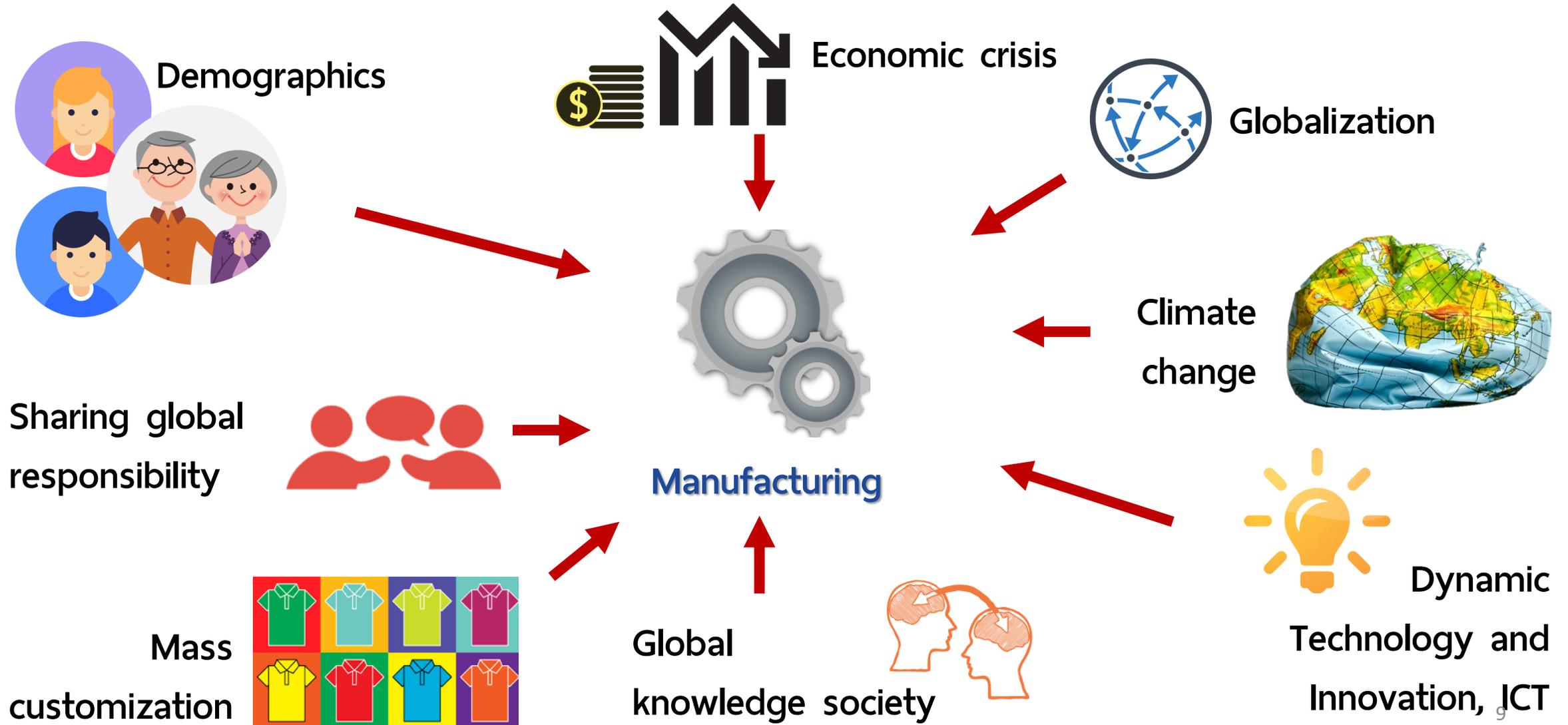
**COMPLEXITY**



# Complicate ≠ Complex

	Complicated Issue	Complex Issue
Characteristics	Multi-faceted <b>repeatable problems</b> that need to be simplified and organized	<b>Ambiguous and somewhat unique</b> problems and stakeholder relations that need to be understood
Thinking Approach	<b>Leverage existing expertise to develop a repeatable solution</b> that simplified and solves the complicated problem	Use innovative thinking to deal effectively with the ambiguity and <b>gain insight into the complexity</b> that makes this problem unique, before discovering potential solutions
Examples	Production line Workflow	Political issues Environmental problems

# Changes & World Megatrends



# Lack of Holistic Viewpoint and/or Creativity

# Thinking

- The process we use to access our intelligence, in addition to our stored knowledge.
- In an old time, there was a belief that intelligence and thinking go in the same way
  - E.g. a person with higher IQ = a good thinker
  - But, actually, this is now always true.
- Thinking is a skill that can be developed.

# **Intelligence and Thinking – The Relationship**

**“Thinking is the operating skill through which intelligence acts upon experience” – Edward de Bono**

# Premises About Intelligence

1

Humans have multiple intelligences

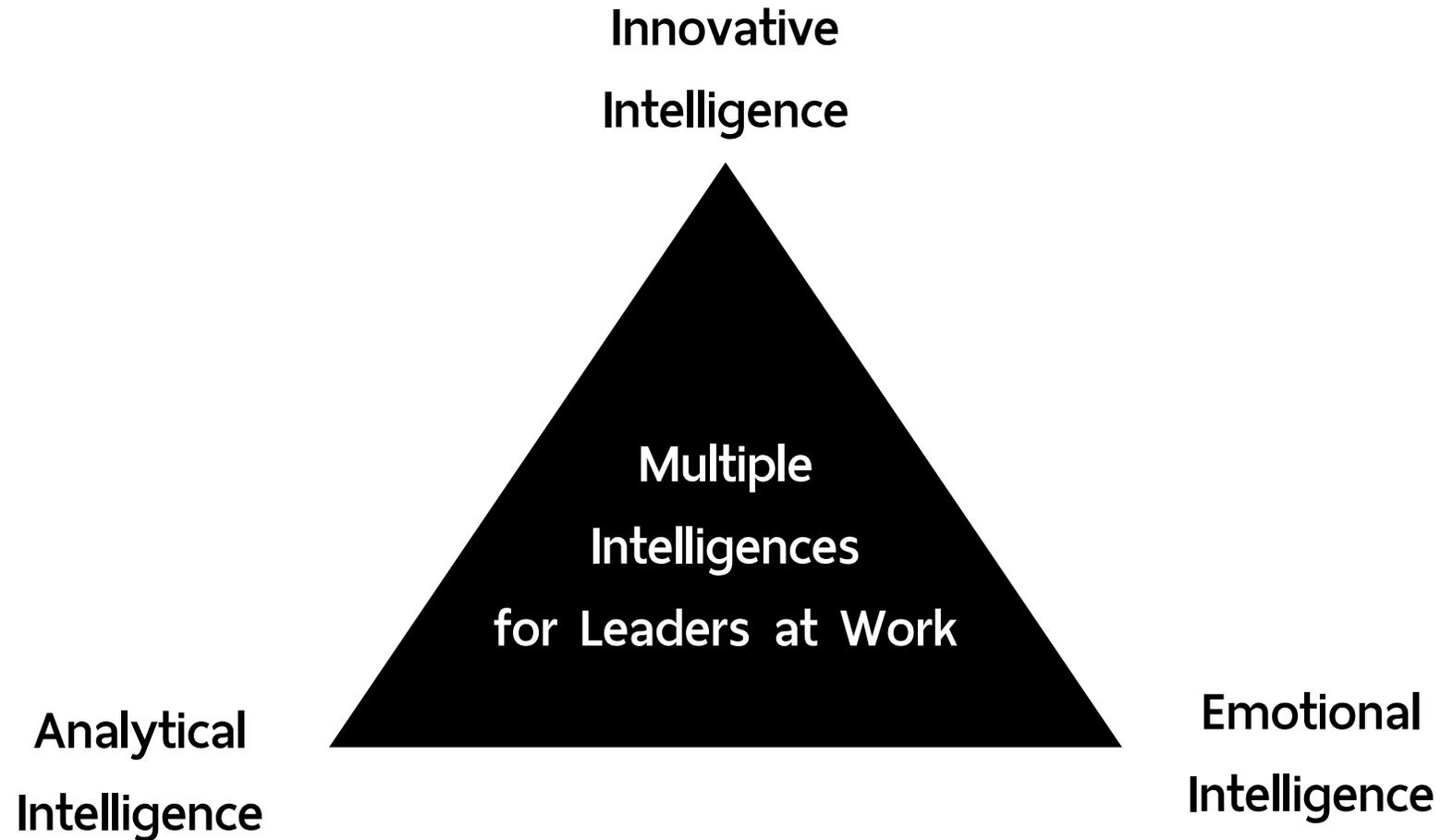
2

Intelligences exist in potential until we access them

3

Context determines whether intelligence potential is realized

# The Three Intelligence for Leaders



# System (1/2)

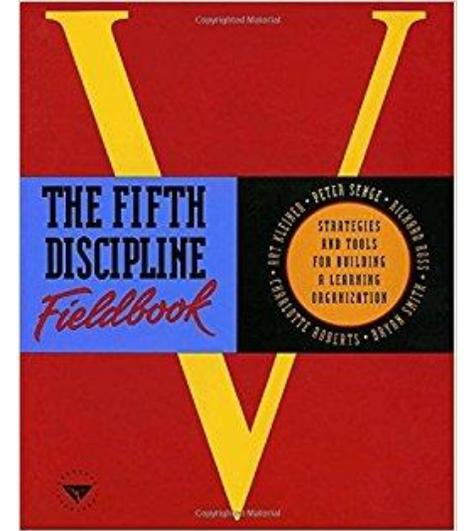
“A complex whole the functioning of which depends on its parts and the interactions between those parts.” – Jackson, M.C.

- Different types of system
  - Physical: river systems
  - Biological: living organisms (including human bodies)
  - Designed: automobiles
  - Abstract: philosophical systems
  - Social: families
  - Human activity: systems to ensure the quality of products

# System (2/2)

- The original meaning

“to cause to stand together”



which includes the *quality of perception with which you, the observer, cause it to stand together.*

- Provided examples in Senge’s book include:

the atmosphere

diseases

factories

chemical reactions

political entities

communities

industries

families

teams

all organizations

# Characteristics of systems

1. Systems have purpose
2. All parts must be present for a system to carry out its purpose optimally
3. The order in which the parts are arranged affects the performance of a system
4. Systems attempt to maintain stability through feedback

# Systems Thinking

“the art and science of making reliable inferences about behavior by developing an increasingly deep understanding of underlying structure.” – Richmond, B., 1994

- Senge, P. gives the definition of Systems Thinking as

“A way of thinking about, and a language for describing and understanding, the forces and interrelationships that shape the behavior of systems. This discipline helps us to see how to change systems more effectively, and to act more in tune with the natural processes of the natural and economic world.” – Senge, P., 1994.

- holistic and more intuitive meanings - consider things as a whole rather than the dynamic structure of the system.

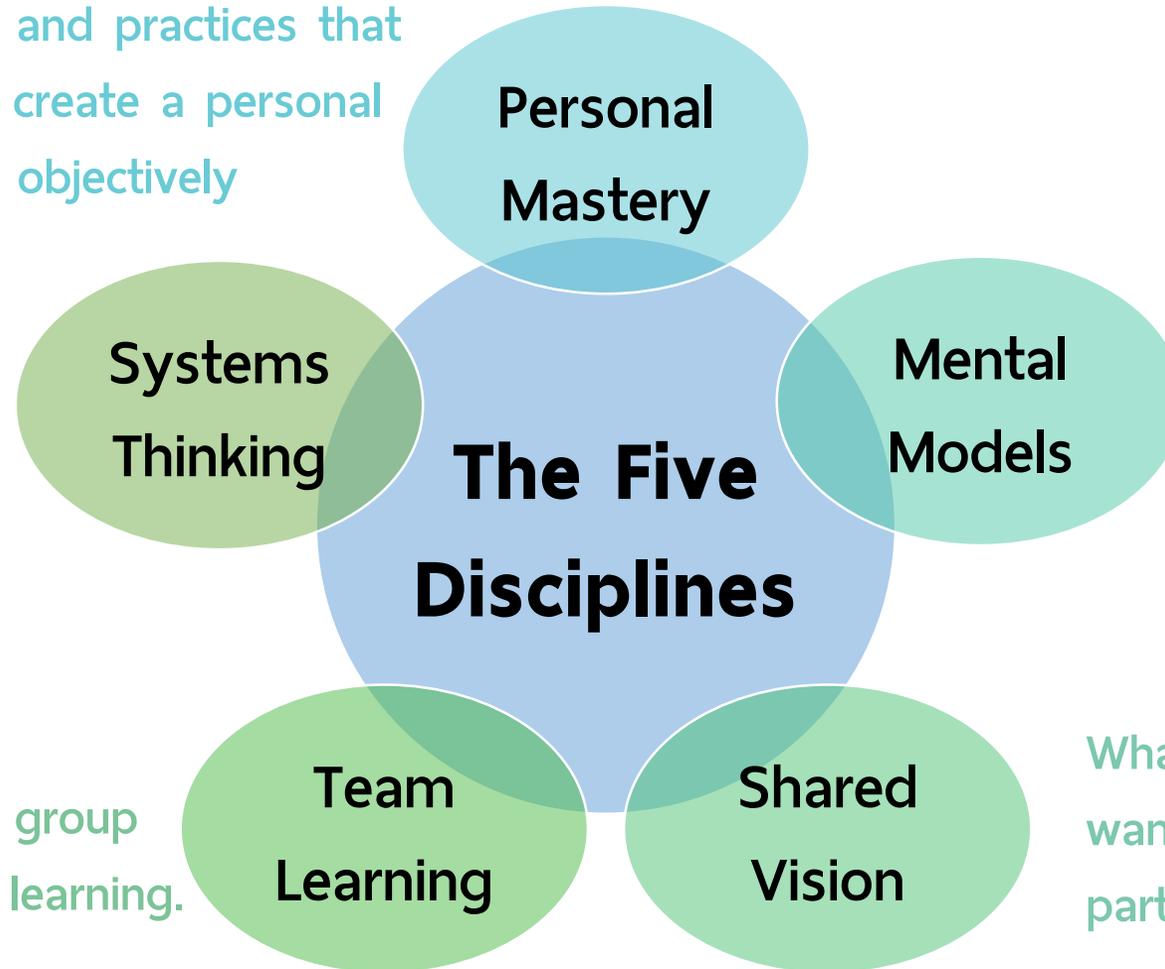
# The Five Disciplines

## The Core of Learning Organization

A set of specific principles and practices that enables a person to learn, create a personal vision, and view the world objectively

A way of thinking about the forces and interrelationships that shape the behavior of systems.

A skill developed for group problem solving and learning.



Conceptual frameworks consisting of generalizations and assumptions from which we understand the world and take action in it.

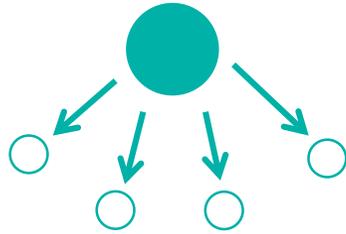
What you and the other members want to create or accomplish as part of the organization.

# The Ways of a Systems Thinker

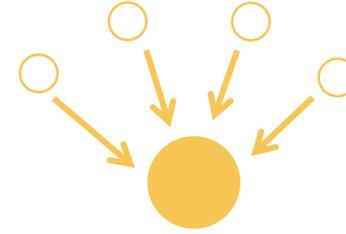
<ul style="list-style-type: none"> <li>• Sees the whole picture</li> </ul>	<ul style="list-style-type: none"> <li>• Looks for interdependencies</li> </ul>
<ul style="list-style-type: none"> <li>• Changes perspectives to see new leverage points in complex systems</li> </ul>	<ul style="list-style-type: none"> <li>• Makes systems visible through causal maps and computer models</li> </ul>
<ul style="list-style-type: none"> <li>• Considers how mental models create our futures</li> </ul>	<ul style="list-style-type: none"> <li>• Sees oneself as part of, not outside of, the system</li> </ul>
<ul style="list-style-type: none"> <li>• Pays attention to and gives voice to long-term</li> </ul>	<ul style="list-style-type: none"> <li>• Seeks out stocks or accumulations and the time delays and inertia they can create</li> </ul>
<ul style="list-style-type: none"> <li>• “Goes wide” to see complex cause and effect relationships</li> </ul>	<ul style="list-style-type: none"> <li>• Watches for “win/lose” mindsets, knowing they usually makes matters worse in situations of high interdependence</li> </ul>
<ul style="list-style-type: none"> <li>• Finds where unanticipated consequences emerge</li> </ul>	
<ul style="list-style-type: none"> <li>• Focuses on structure</li> </ul>	

# Analytical Thinking vs. Synthetic Thinking

## Analytical Thinking



## Synthetic Thinking



Analysis and synthesis, though commonly treated as two different methods, are, if properly understood, only the two necessary parts of the same method. Each is the relative and correlative of the other.

Sir W. Hamilton.

# Analytical Thinking

The abstract separation of a whole into its constituent parts in order to study the parts and their relations. Separating and distinguishing elements of a concept, idea, problem, and issue in order to understand its essential nature and inner relationships.

Manichander, T., Brindhamani, M., and Marisamy, K.

# Analytical Thinking and Its Objectives

1

To understand  
problems

2

To understand parts  
of situation and  
their connections

3

To identify  
differences

# Steps in Analytical Thinking

## Define the Problem

- Finding challenging issues.
- To make sure that the right problem will be corrected.

## Gather and interpret information

- Meaningful qualitative and quantitative information.

## Develop possible solutions

- Trying to figure out the solution to the problem.
- The possible solutions can be either possible root causes or key drivers of the problem.

## Test possible solutions

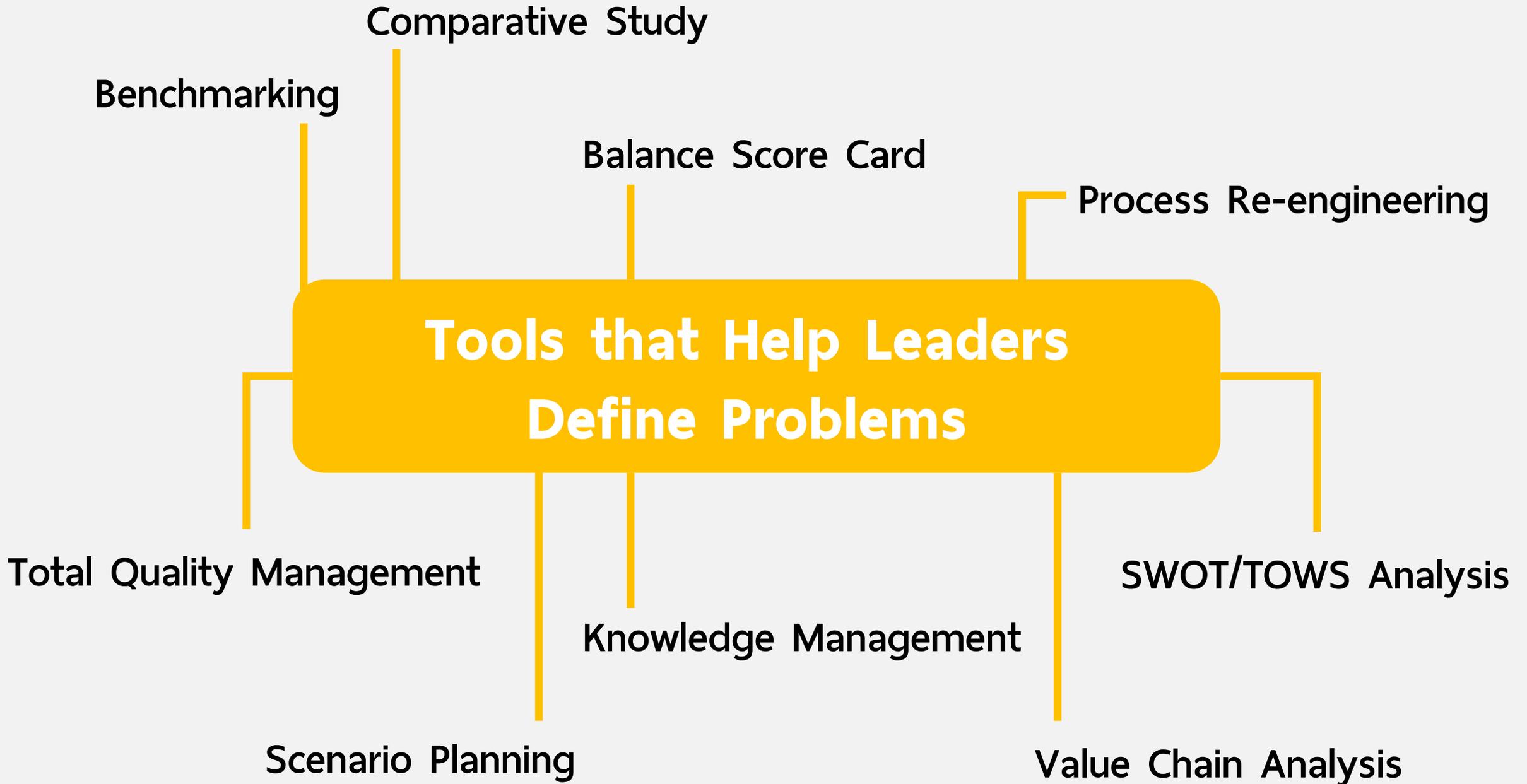
- Analyzing the facts to prove or disprove each developed solution.

## Select and implement a solution

- Selecting solutions which match our clients' needs.

# **Tools that Help in Analytical Thinking**

**:: Problem Identification ::**



# Gain insight into root cause

- Find the root cause by asking “why?” and “why not?”
  - Keep asking until there is no answer
- Use this technique when *the key person (or people) who know the environment and the background for the problem are in the room.*
  - Do not accept “Because it is so” as an answer
  - Try to identify inconsistencies and logic gaps in answers

Issue / Problem / Opportunity

Why?

Answer 1

Why?

Answer 2

Why?

Answer 3

Why?

Answer 4

Why?

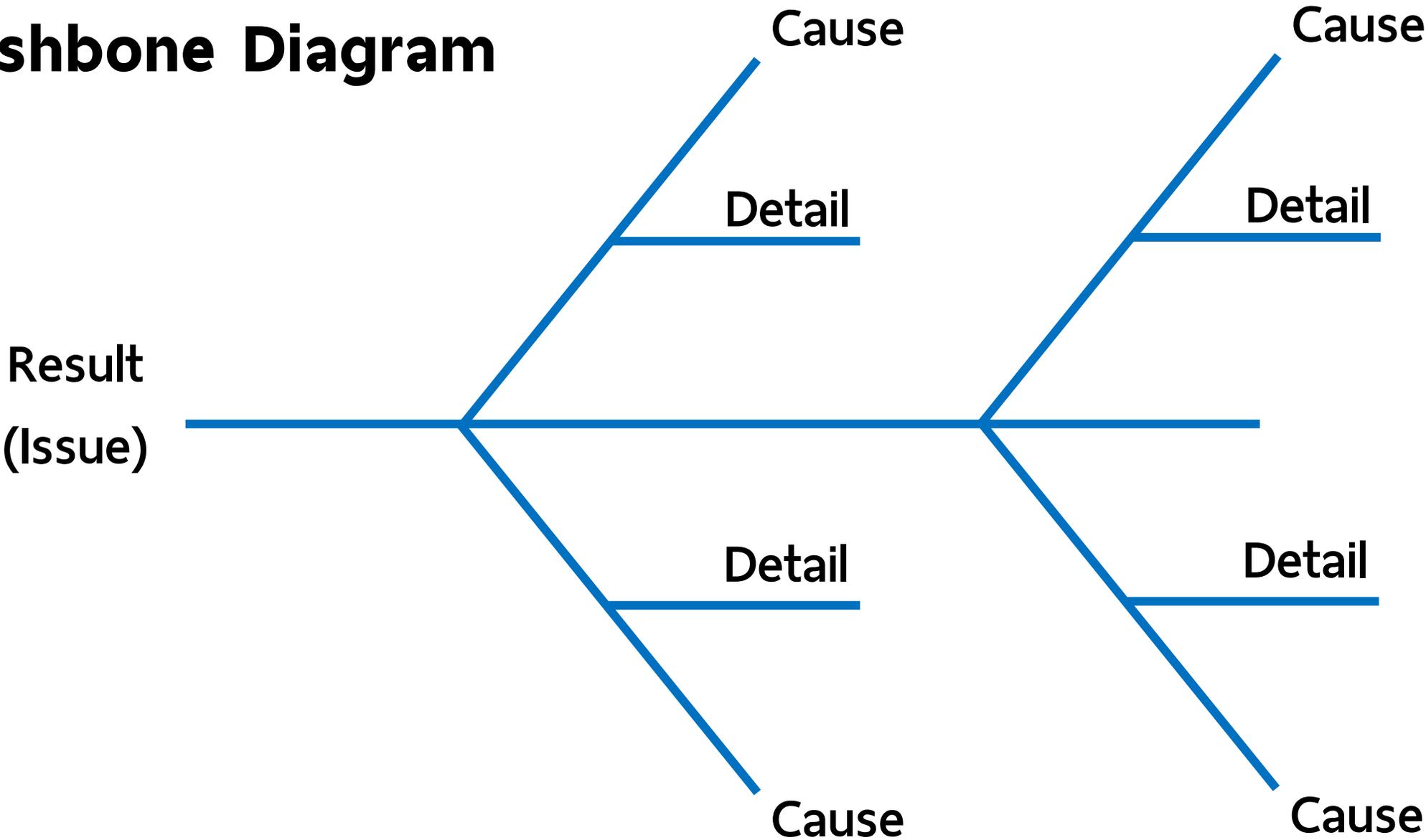
Answer 5

Countermeasure

Your idea solution 😊

## 5 Whys Analysis

# Fishbone Diagram



# Or Even Asking Basic Questions Like . . .

Where ?

When ?

What ?

Why ?

Who ?

How ?

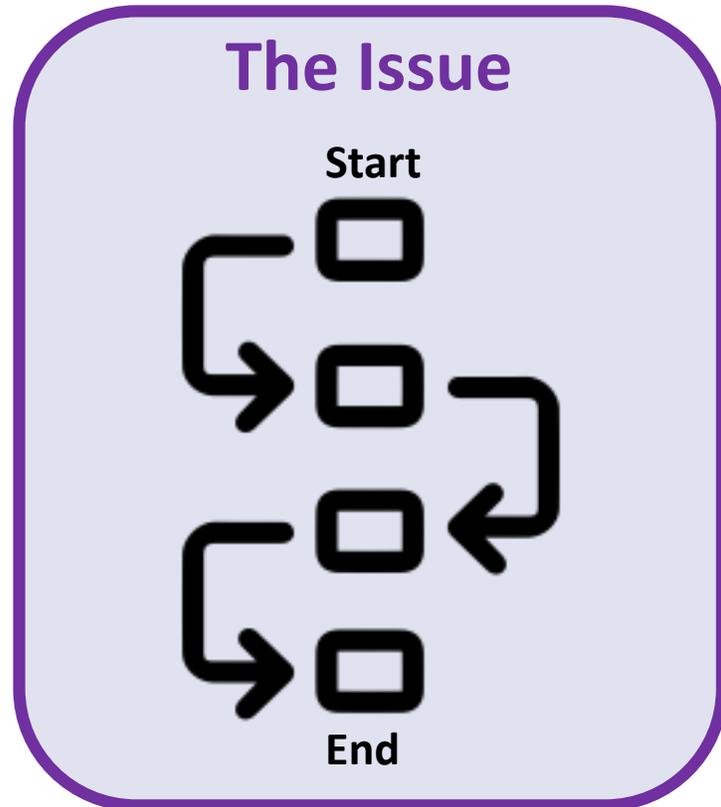


# **Tools that Help in Analytical Thinking**

**:: Information Gathering ::**

# Break down the issue

## SEQUENCING

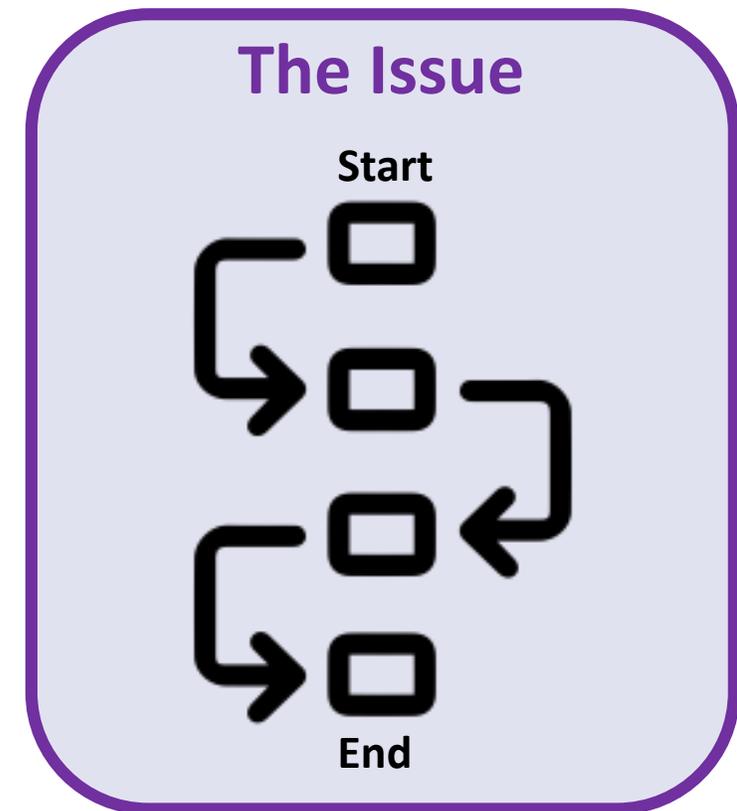


## ATOMIZATION



# Break down the issue into its parts - Sequencing

- To understand the sequencing within the issue from beginning to end
- Help avoiding the common problem-solving mistake of using the end goal as the definitive problem
- Good with issues that have start and end points
- Needs
  - Members who know the entire process
  - Identifying the area where bottleneck occurs



# Break down the issue into its parts - Atomization

- Breaking the issue down to its smallest components
- A note-taking approach with following rules
  - Each idea should be in a circle
  - Link each idea to another idea
- Good for gathering team's collective knowledge
- Not good with issues that highly tie to emotion
- Needs
  - Allow enough time for atomization process
  - Starting in pair for more effective process
  - Good atomization comes with some elements that do not fit any cluster

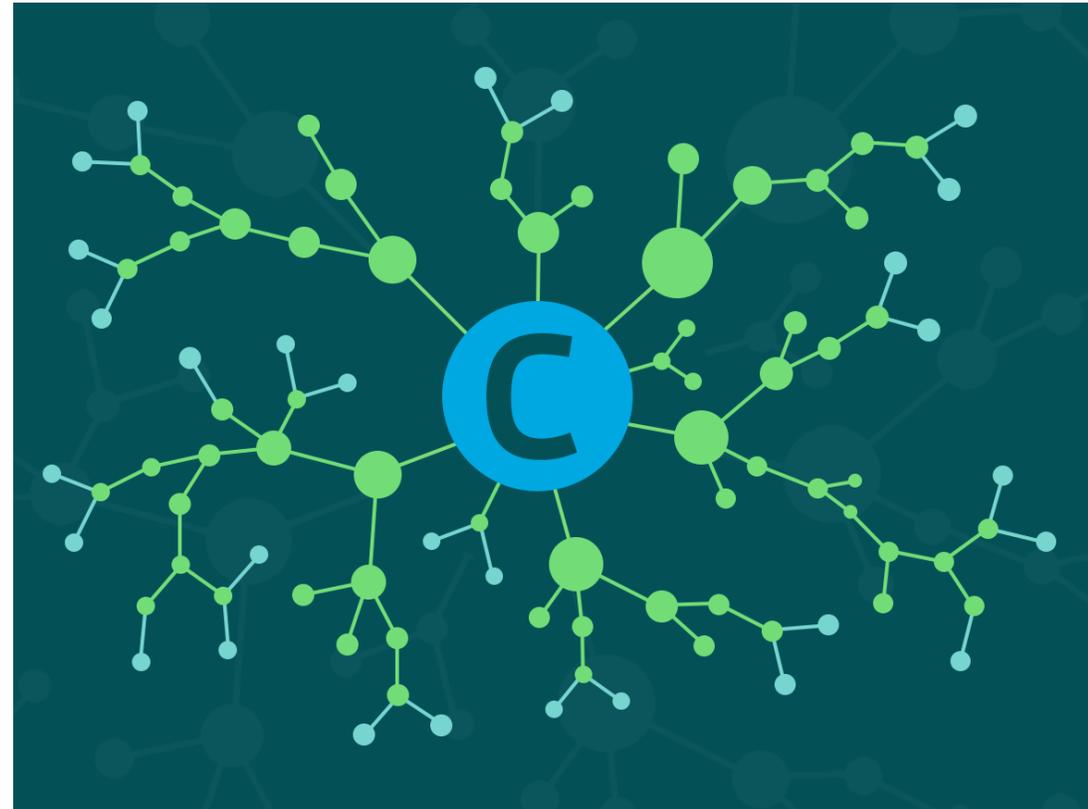
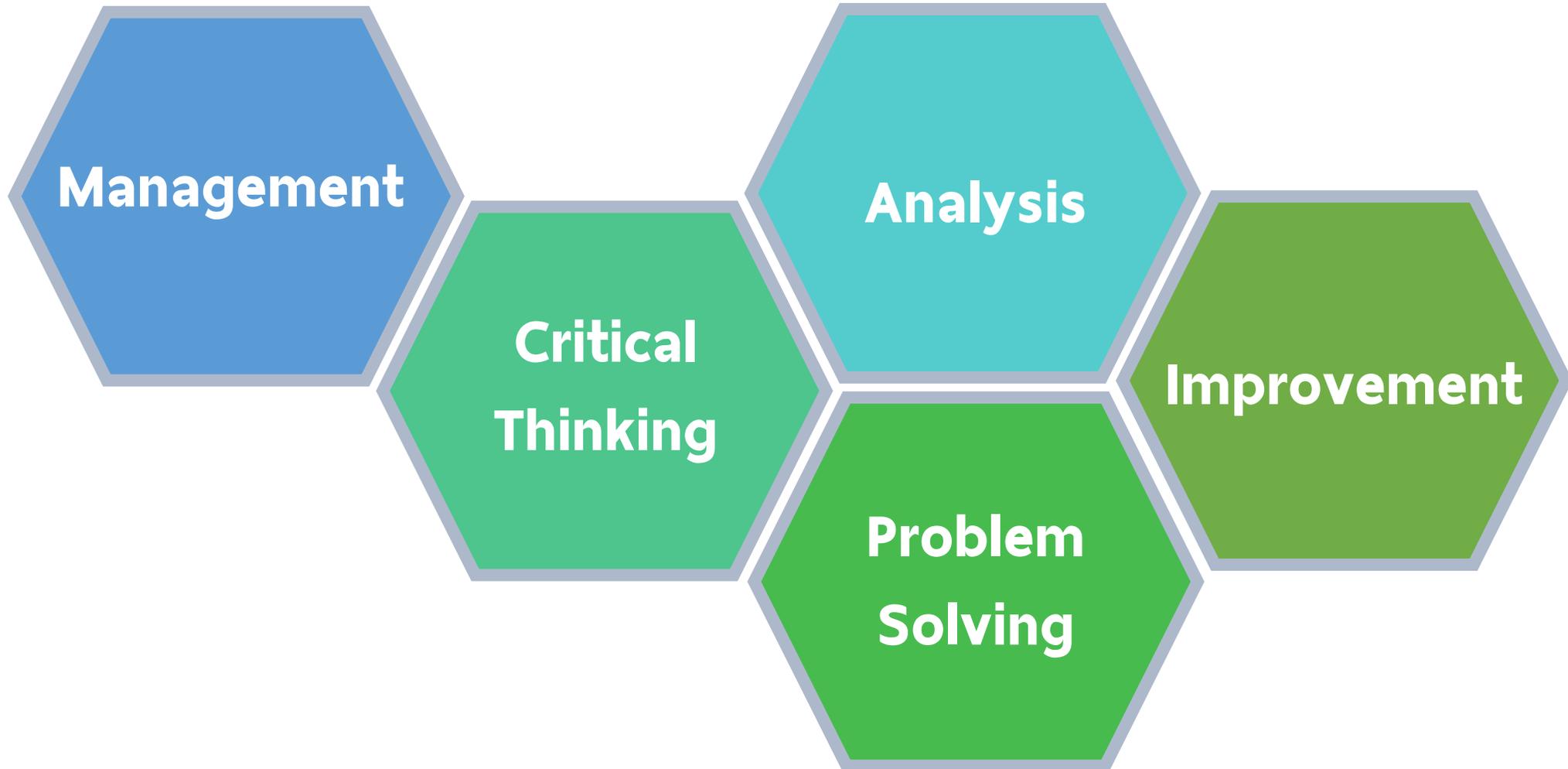


Image source: <https://www.sigstr.com/2016/09/14/repurposing-content-atomizing/>

# Usages of Analytical Thinking



# When Shall We Use the Analytical Thinking?

When you are dealing with **COMPLICATED** issues

Which are . . .

- Something repeatable
- Can be simplified
- Context (time and space) does not show any effect

**But . . .**

Issues we are dealing today are “**COMPLEX**” issues



# Synthetic Thinking

The combination of ideas into a complex whole.

The combination of separate elements of thought into a whole, as of simple into complex conceptions, species into genera, individual propositions into systems.

Webster Dictionary

# Synthetic Thinking and Its Objectives

1

To find solutions

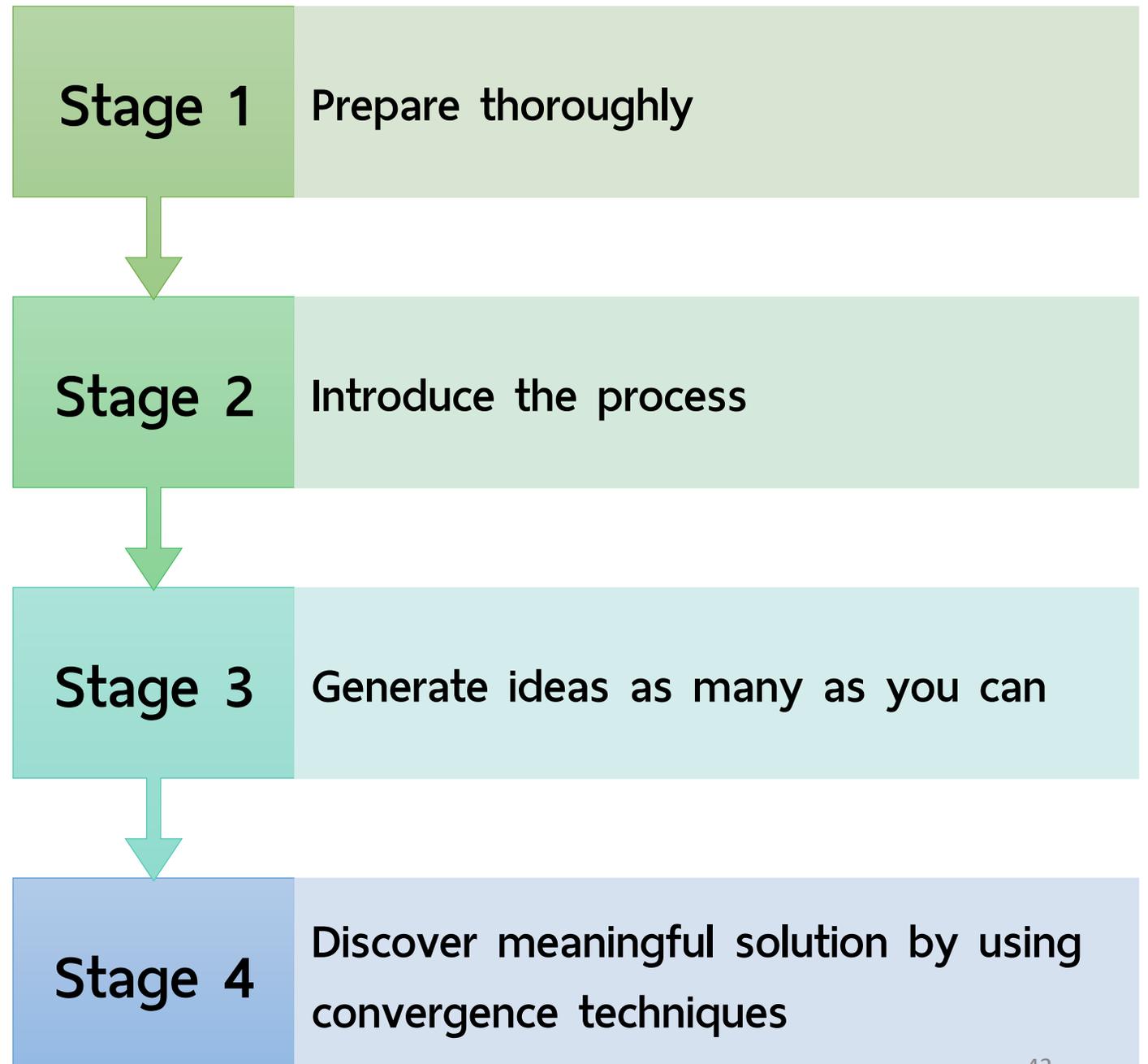
2

To understand how things work together

3

To identify similarities

# The Four Stages of Idea Generation



# Stage 1 – Prepare Thoroughly

To balance the type of participants, it actually depends on desired output.



## Stage 2: Introduce the process

- **Write down** the list of problem statements, key boundaries, and type of outcome  
→ put it on the wall (flip chart)
- **Telling** process overview and available time
- **Encourage all members to ask** questions about the complex issue
- **Inform** all members about how and by whom the preferred solutions will be selected
- **Provide** a warm-up creativity exercise to set the tone for the meeting

# Stage 3: Generate many ideas through divergence

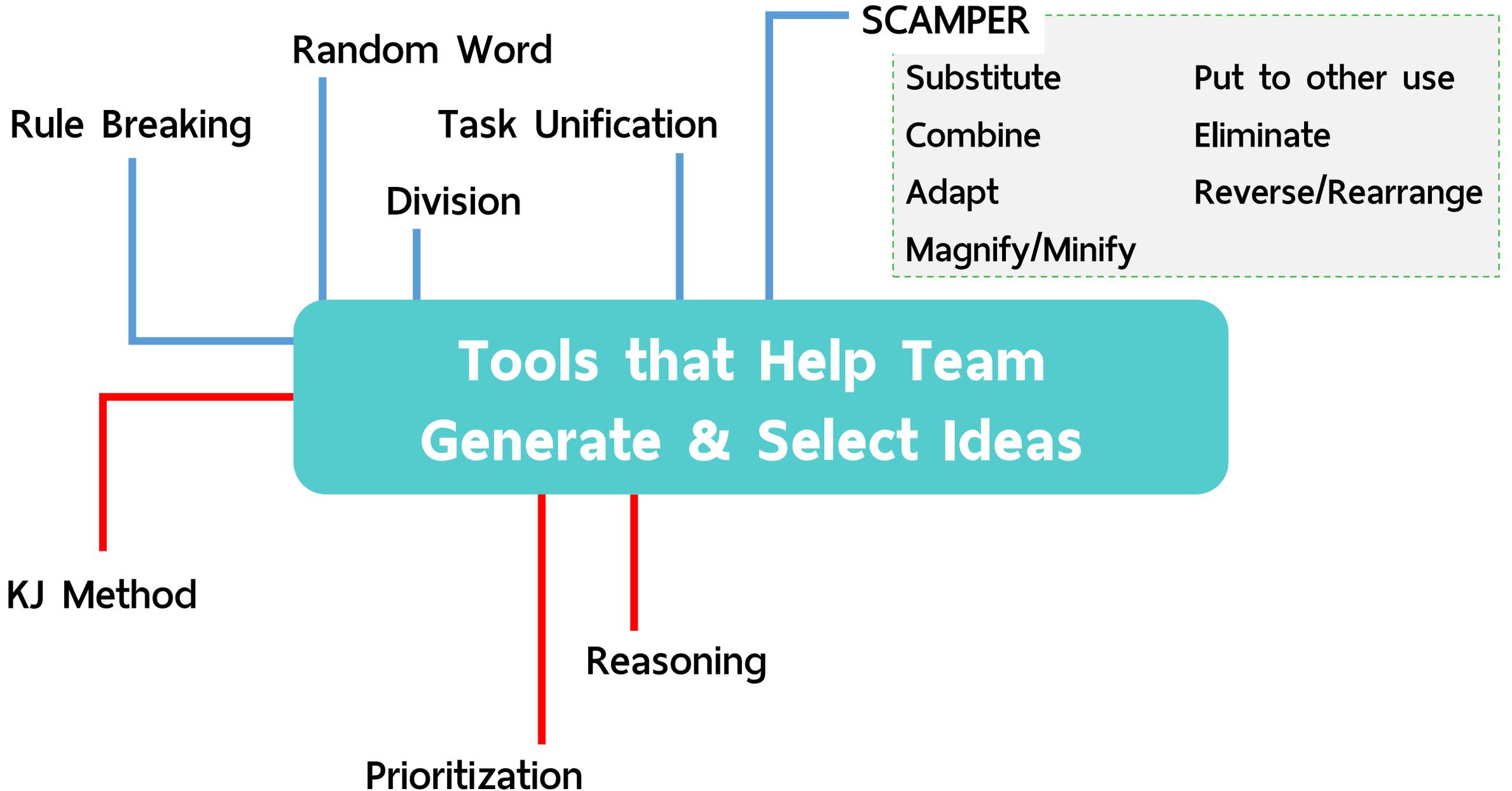
- **Balance** individual and group contributions
  - Individual work: Let individual create crazy ideas
  - Group display: Facilitator captures all ideas and put them on the flip chart
  - Group brainstorming: The group review all ideas and adds additional ones (let see if the group can create additional ideas)
- Clearly **separate divergence and convergence**
- **Balance** idea collection and free-flowing discussion
- **Bypass** self-censorship during the divergence stage

# Stage 4: Discover meaningful solution through convergence

- **Combine** 3 intelligences at this stage to develop solutions
  - Analytical Intelligence
  - Emotional Intelligence
  - Innovative Intelligence
- The challenge is that we have to *prevent participants from using their analytical intelligence to push the group to conclusions too quickly*

# **Tools that Help in Synthetic Thinking**

**:: Idea Generation & Idea Selection ::**



NO CASH TO CASHOUT  
ON CASHOUT

**JUST  
WALK  
OUT**

SHOPPING

amazon





This is a story about me, my daughter

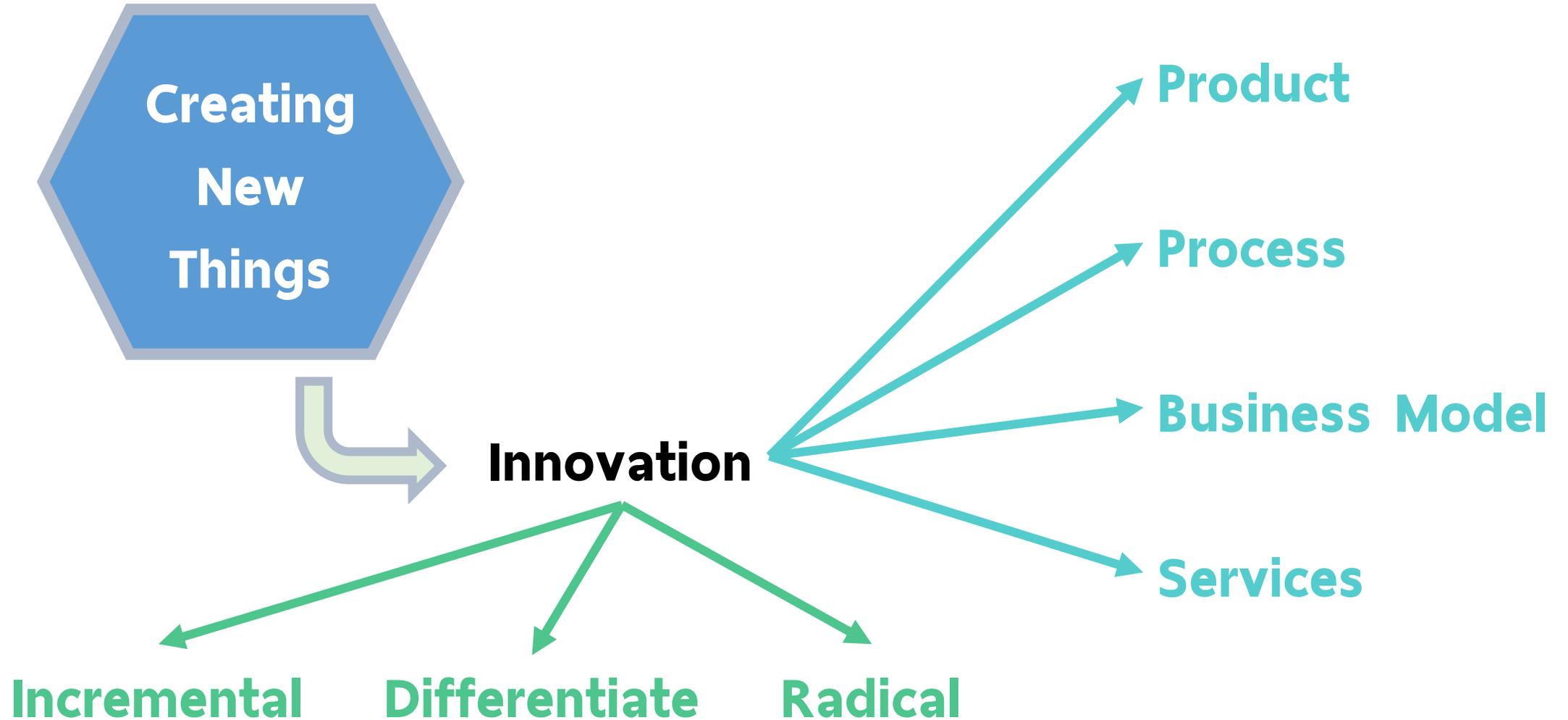
# Other Examples



Image source: <http://www.seojapan.com/blog/15-creative-food-packages>



# Usages of Synthetic Thinking



# Q&A

**Further information and contact: [bongkot.jen@nida.ac.th](mailto:bongkot.jen@nida.ac.th)**

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