

Creativity and Design Thinking

Dr. Vicenc Fernandez



Agenda

1. Design Thinking
2. Vertical vs Lateral Thinking
3. The Process
 1. Search
 2. Synthesize
 3. Ideate
 4. Formulate



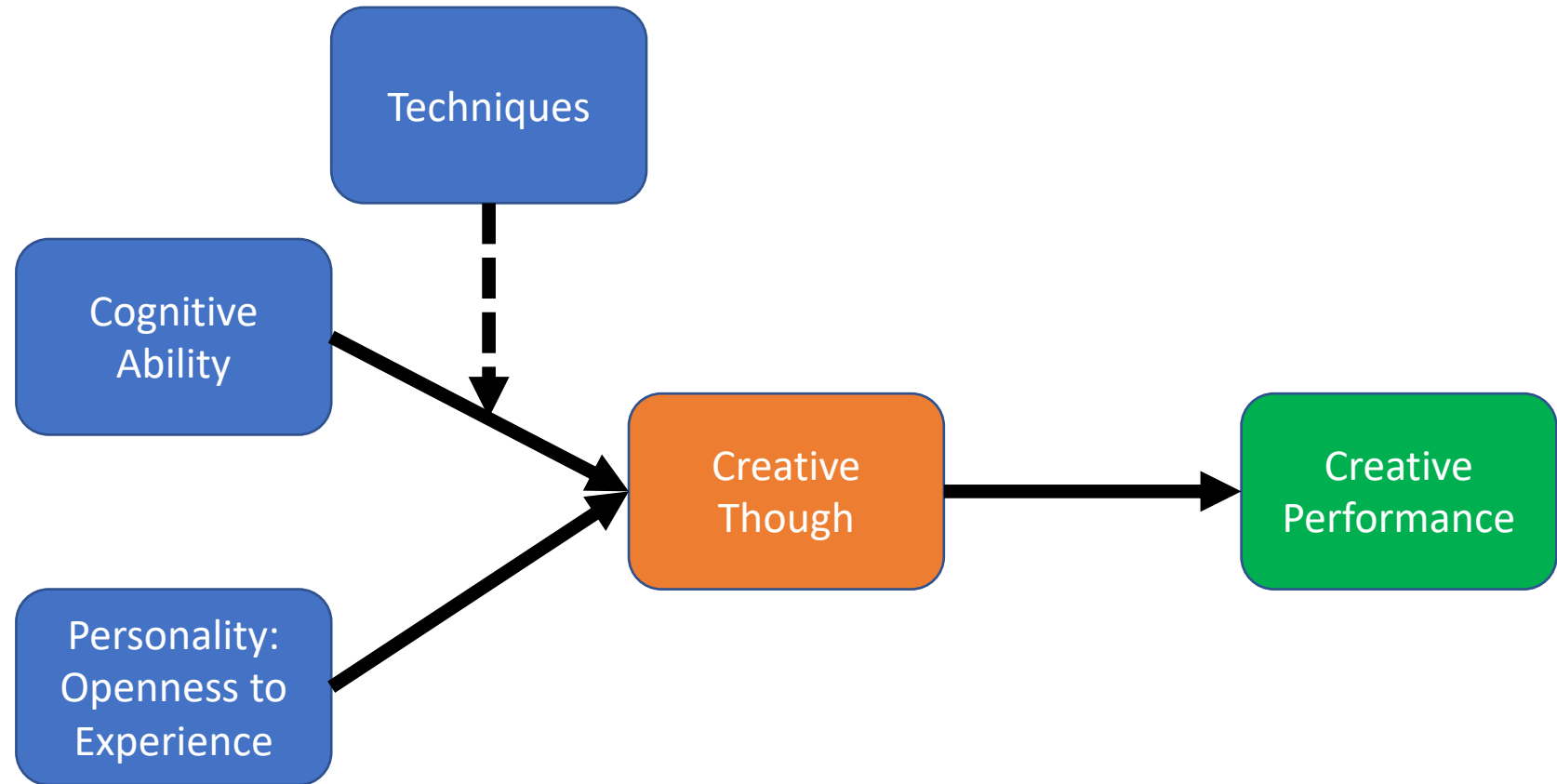
What is Creativity?

Creativity involves the production of something novel, useful, original and worthwhile products

Also called: inventive, original thinking, constructive imagination, divergent thinking and creative thinking.

Mumford, M.D. (2003). Where have we been, where are we going? Taking stock in creativity research. *Creativity Research Journal*, 15(2–3): 107–120.
Sternberg, R.J. (2011). *Creativity*. *Cognitive Psychology* (6 ed.). Cengage Learning. ISBN 978-1-133-38701-5.

Why?



Design Thinking

Vertical Thinking	Lateral Thinking
Analytical	Provocative
Every step has to be right	Not necessary
The wrong paths are denied	No path is rejected
Excludes the unrelated	Explores the unrelated to the problem
Fixed classifications	Alternative classifications
Finite process	Probability process

De Bono, E. (1990). *Edward de Bono's master thinker's handbook: a guide to innovative thinking*. Penguin Books.

Design Thinking

Design Thinking is a methodology that allow to build an atmosphere that encourages creative thinking

Lateral Thinking

Last day, my grandmother was having breakfast when her glasses fell into her cup full of coffee, but the glasses did not get a little wet. How is it possible that they did not get wet?

Lateral Thinking

There are three switches outside a locked room. Inside the room are three lamps. You can turn the switches on and off as many times as you want, as long as the door to the room remains closed. Then, you must enter the room only once and determine which switch corresponds to each lamp.

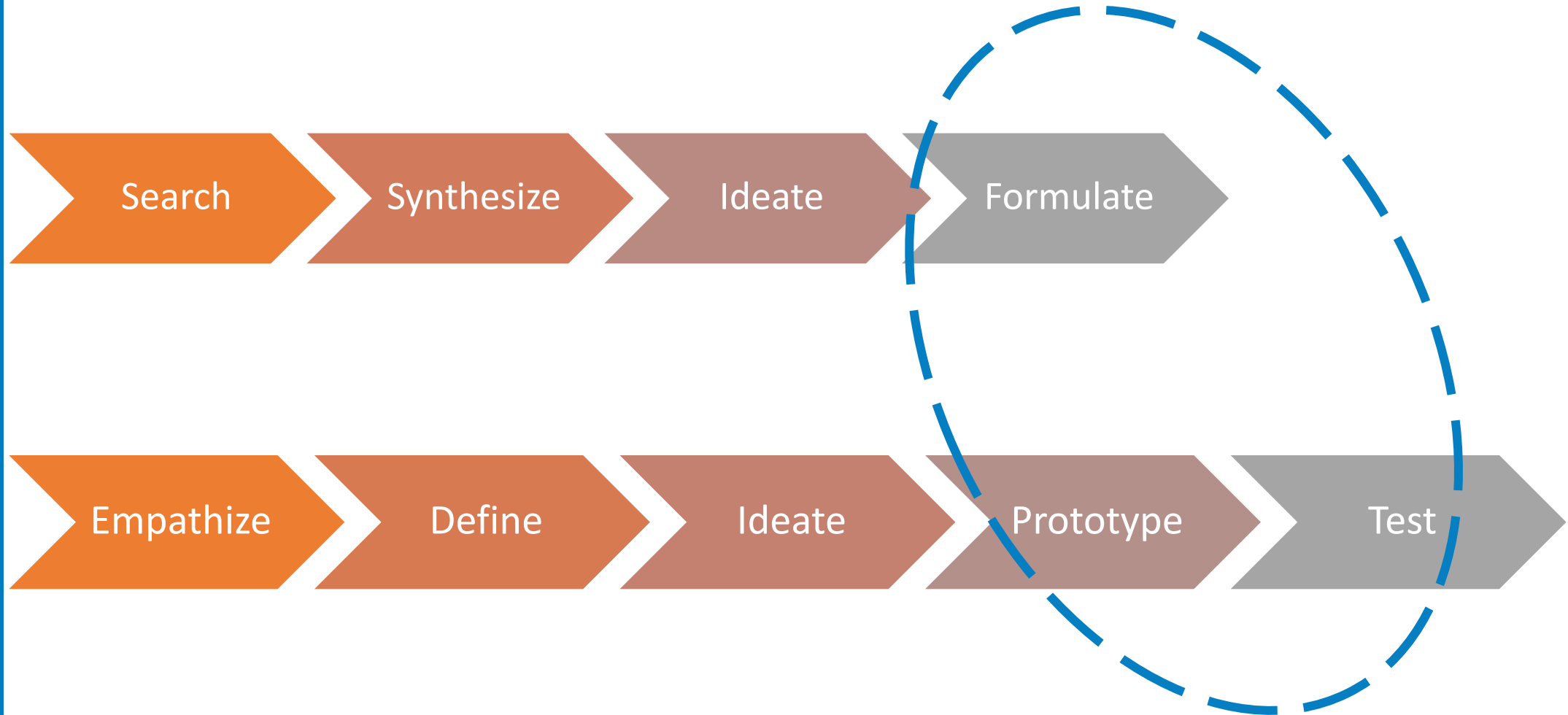
Lateral Thinking

A young woman leaves her house to meet her friends, but forgot her driver's license at home. In the street, she didn't stop at the red light and went the opposite direction. A traffic policeman saw everything, but did nothing. Why?

Lateral Thinking

A woman lives on the tenth floor of a building. Every day she takes the elevator to the ground floor to go to work. When she returns, however, she takes the elevator to the seventh floor and makes the rest of the journey to the floor on which she lives (the tenth floor) by the stairs. While the woman hates walking, why does she do it?

Design Thinking - Process



Design Thinking - Process



LATERAL THINKING

Design Thinking - Process



divergent



convergent



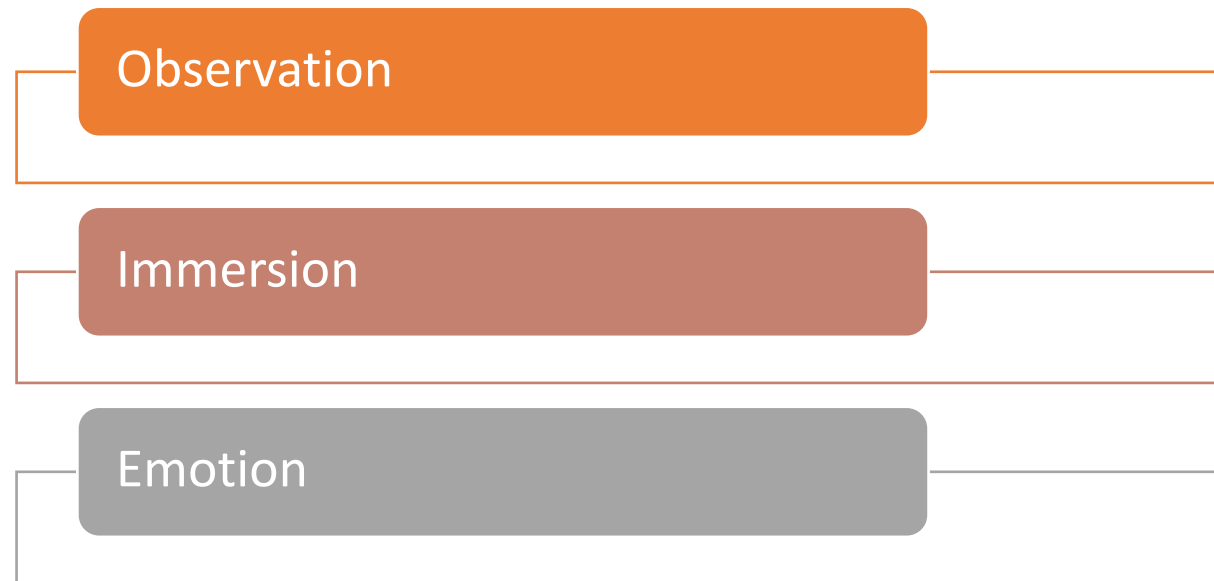
divergent



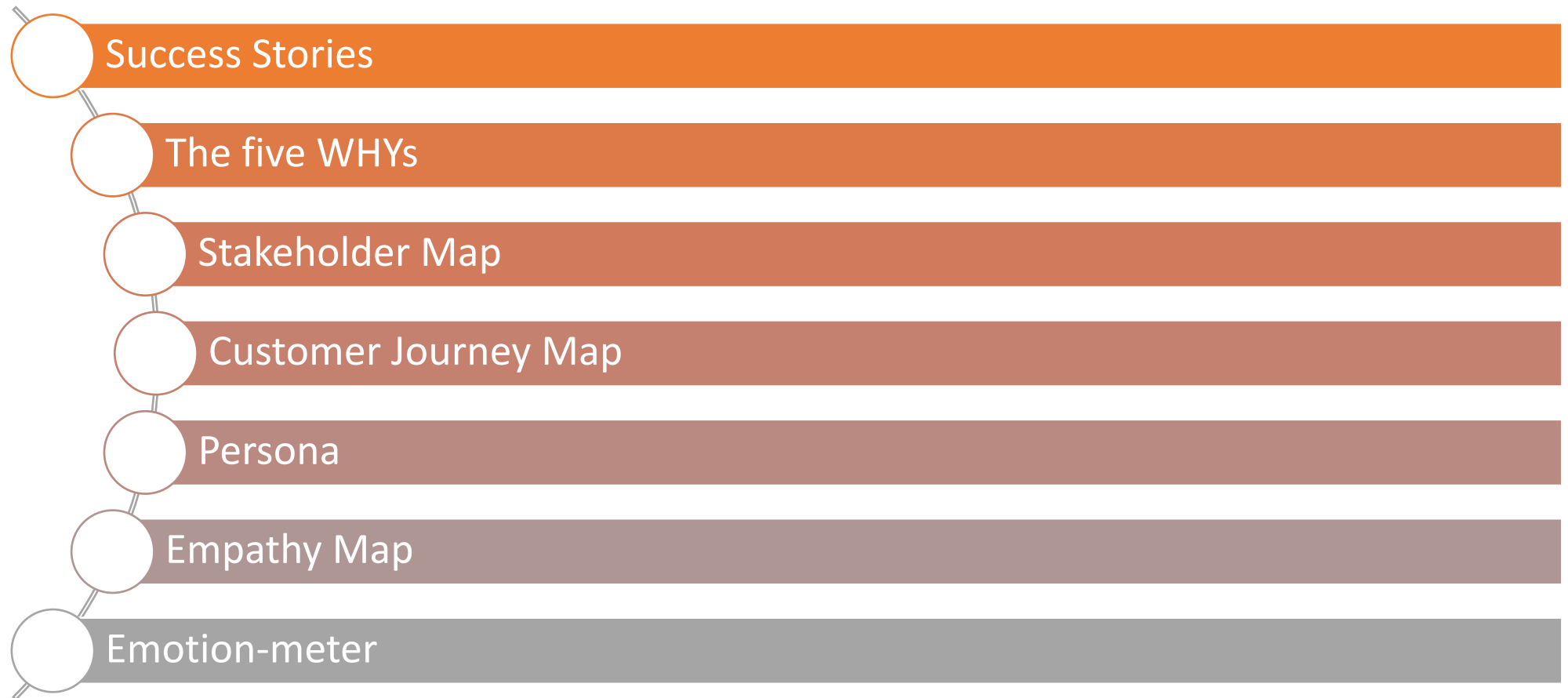
convergent

Search

To understand what reality we are trying to address, is to obtain information through interactions and observations.



Search >> Techniques



Design Thinking - Process



divergent



convergent



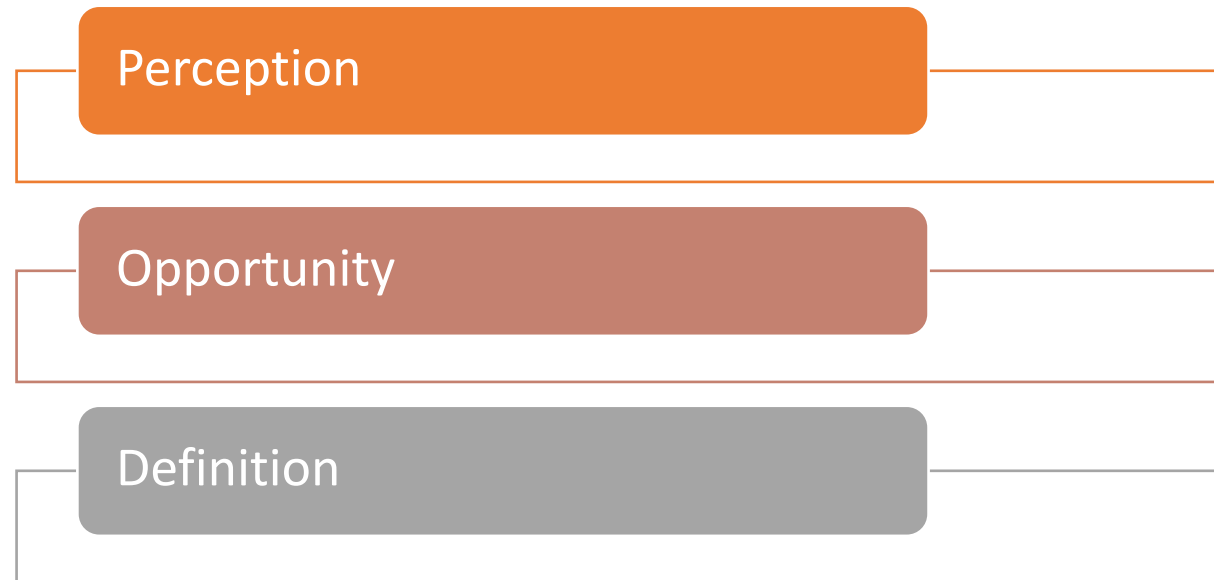
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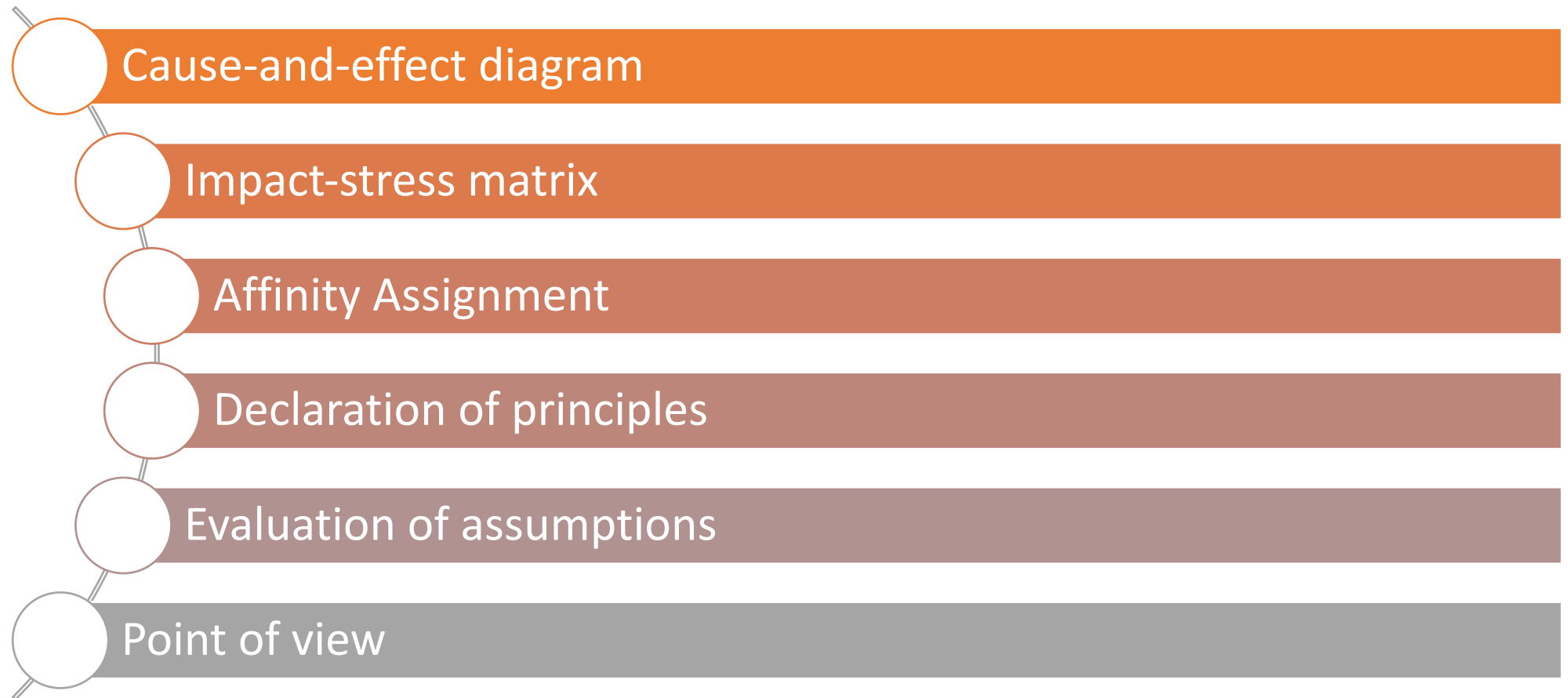
convergent

Synthesize

To sort data and look for patterns. Filtering the information we have collected and keeping only what is important.



Synthesize >> Techniques



Design Thinking - Process



divergent



convergent



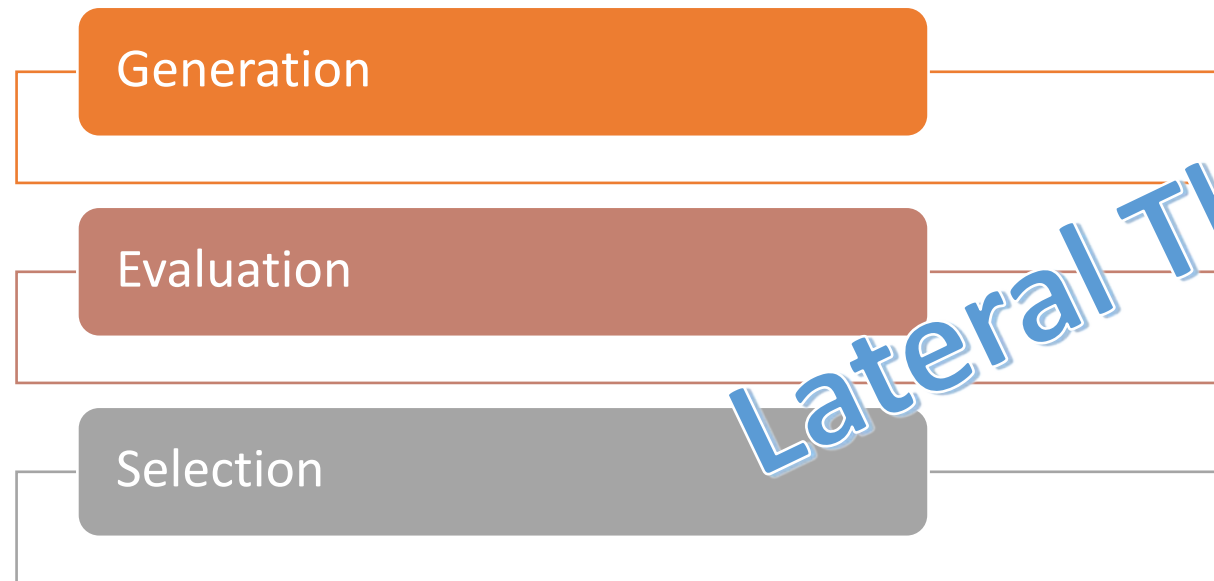
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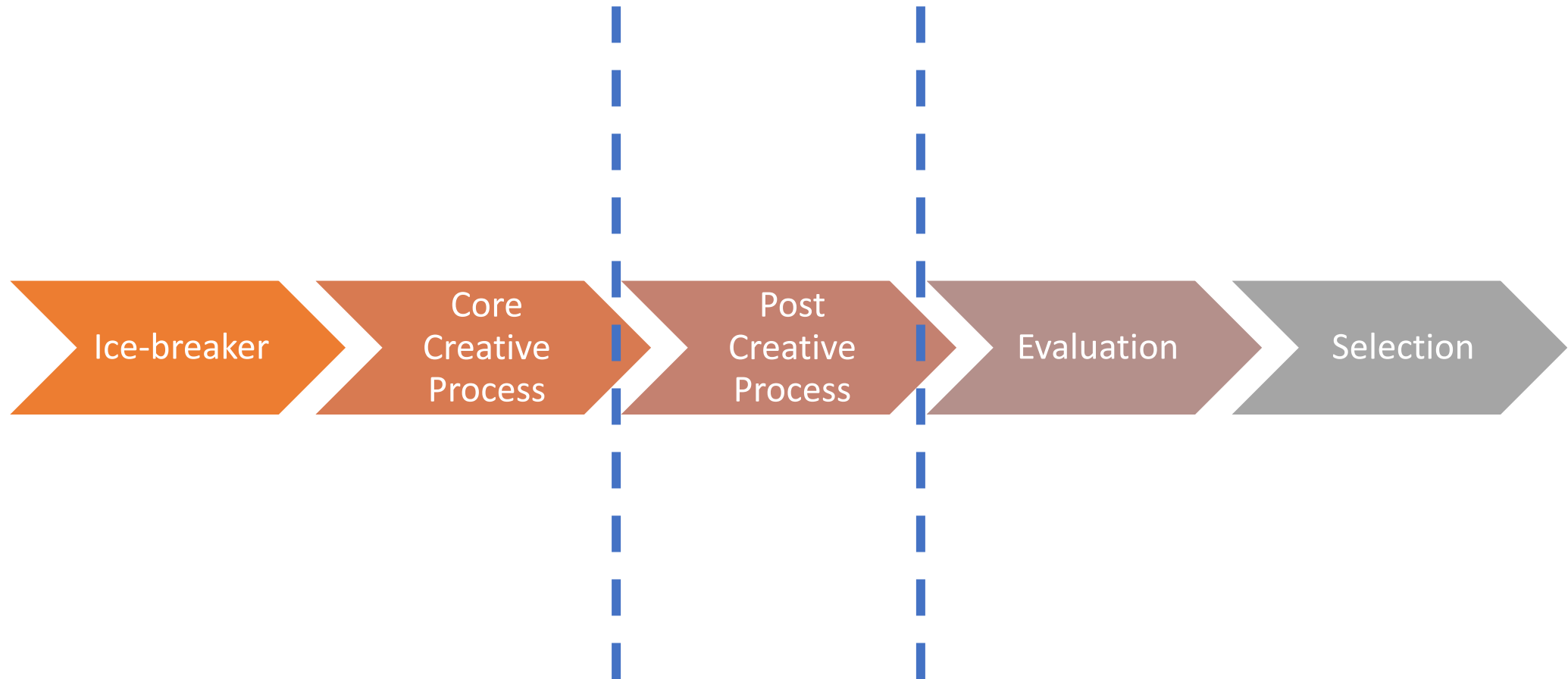
convergent

Ideate

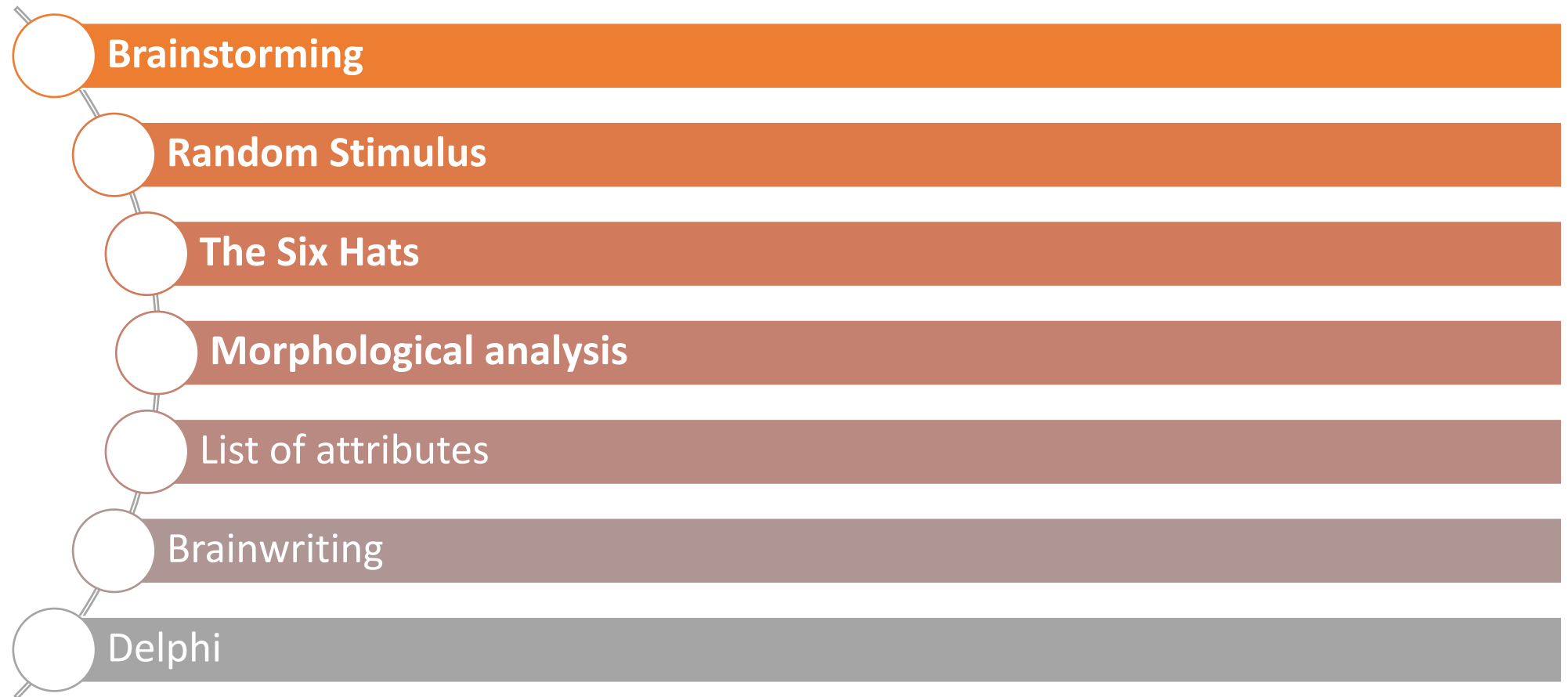
To produce ideas, to generate options to solve the challenge, deploying our proposal capacity to the maximum.



Ideate



Ideate >> Techniques



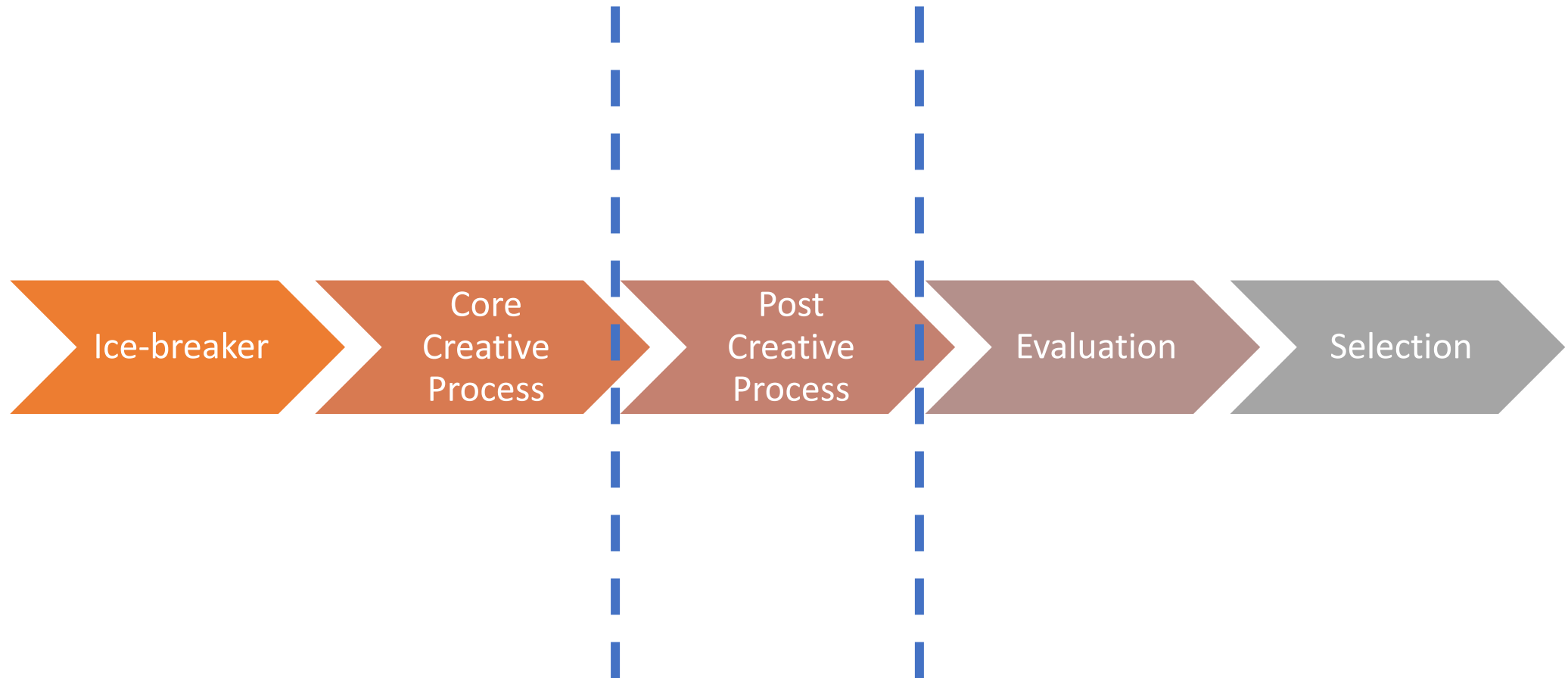
Ideate >> Techniques



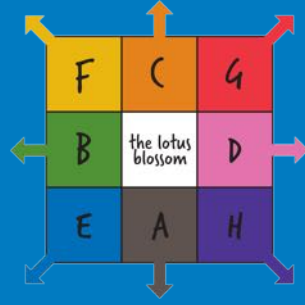
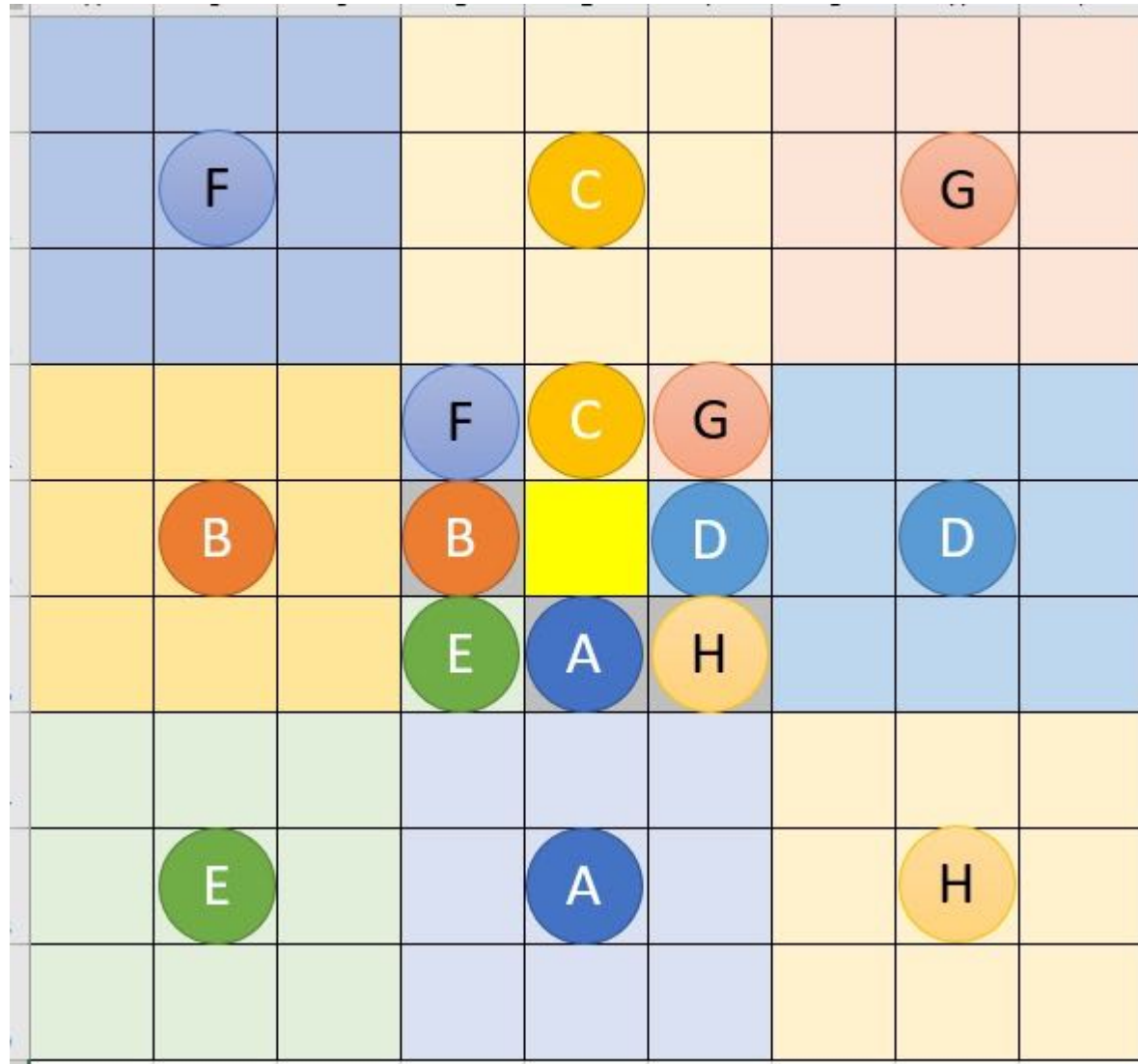
Ideate >> Techniques



Ideate



Lotus Blossom



Alphabetic Sources

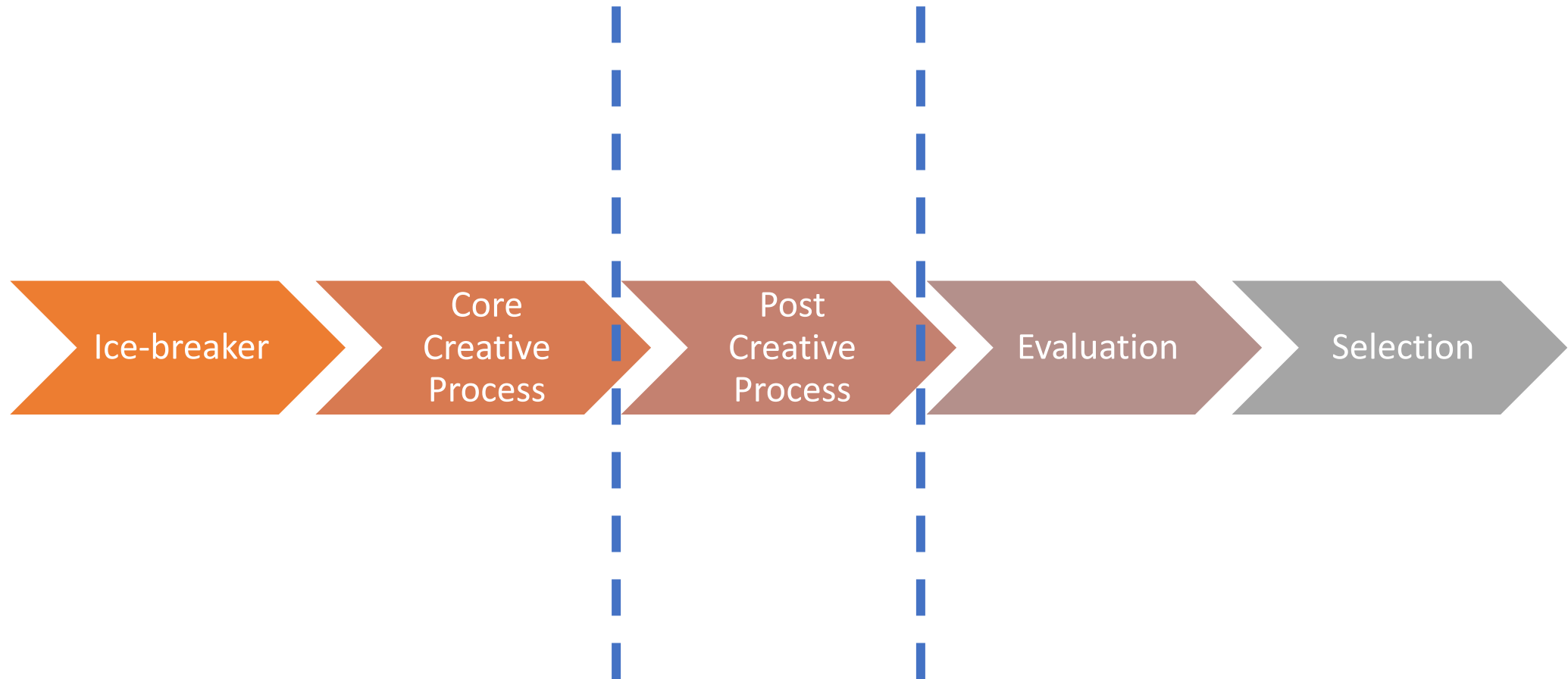


3 ideas

6 people

5 minutes

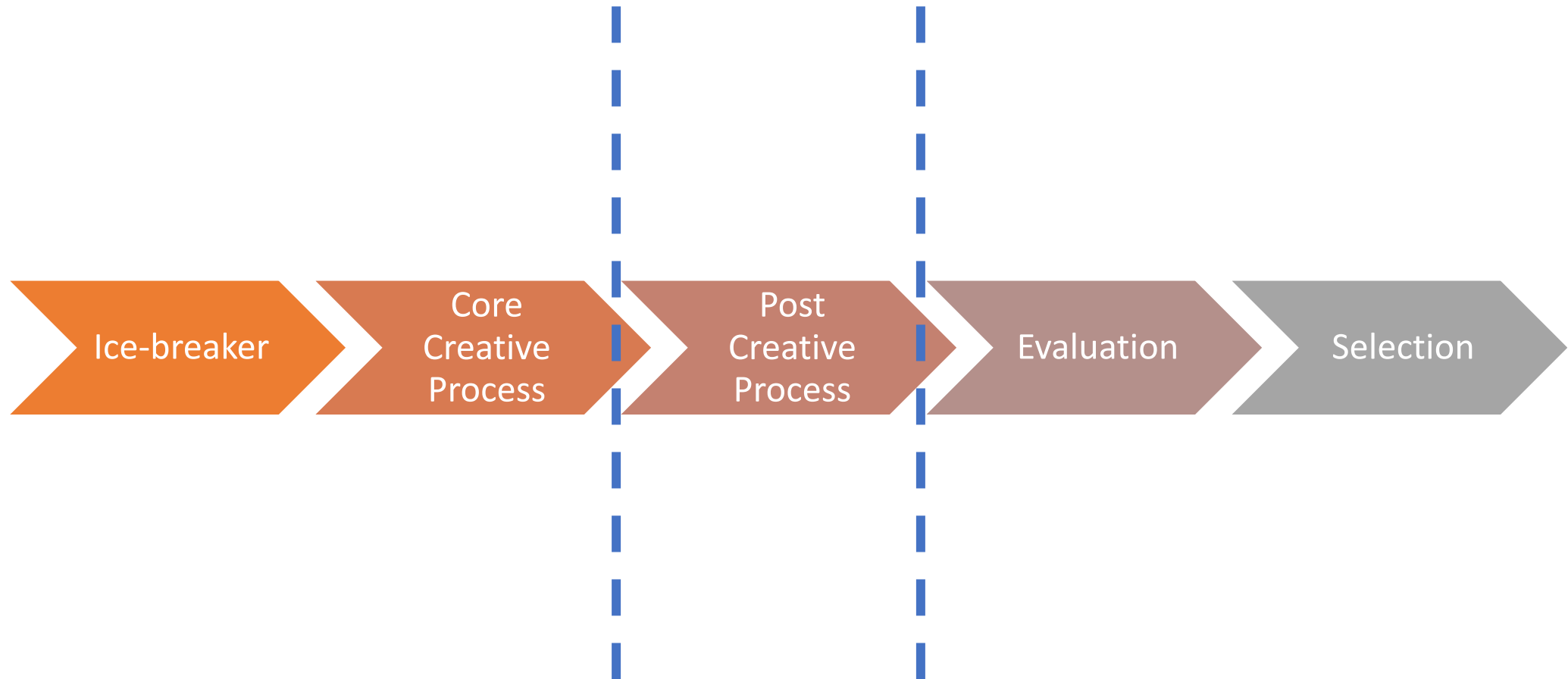
Ideate



Six hats



Ideate



Idea	
Round 01	
Round 02	
Round 03	
Round 04	
Round 05	
Round 06	
TOTAL	

Design Thinking - Process



divergent



convergent



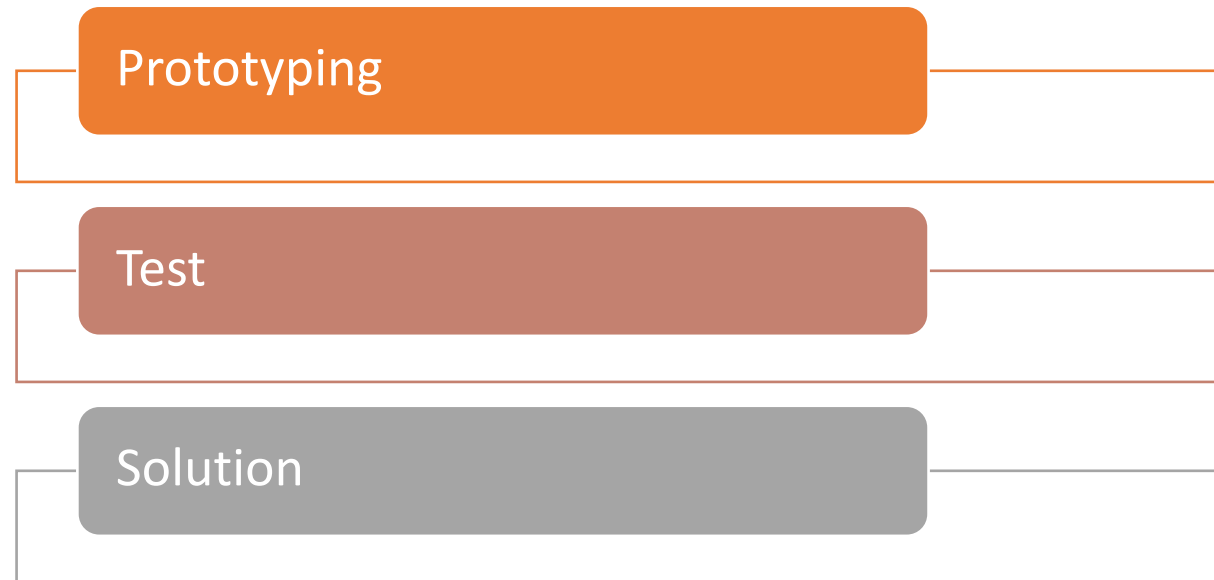
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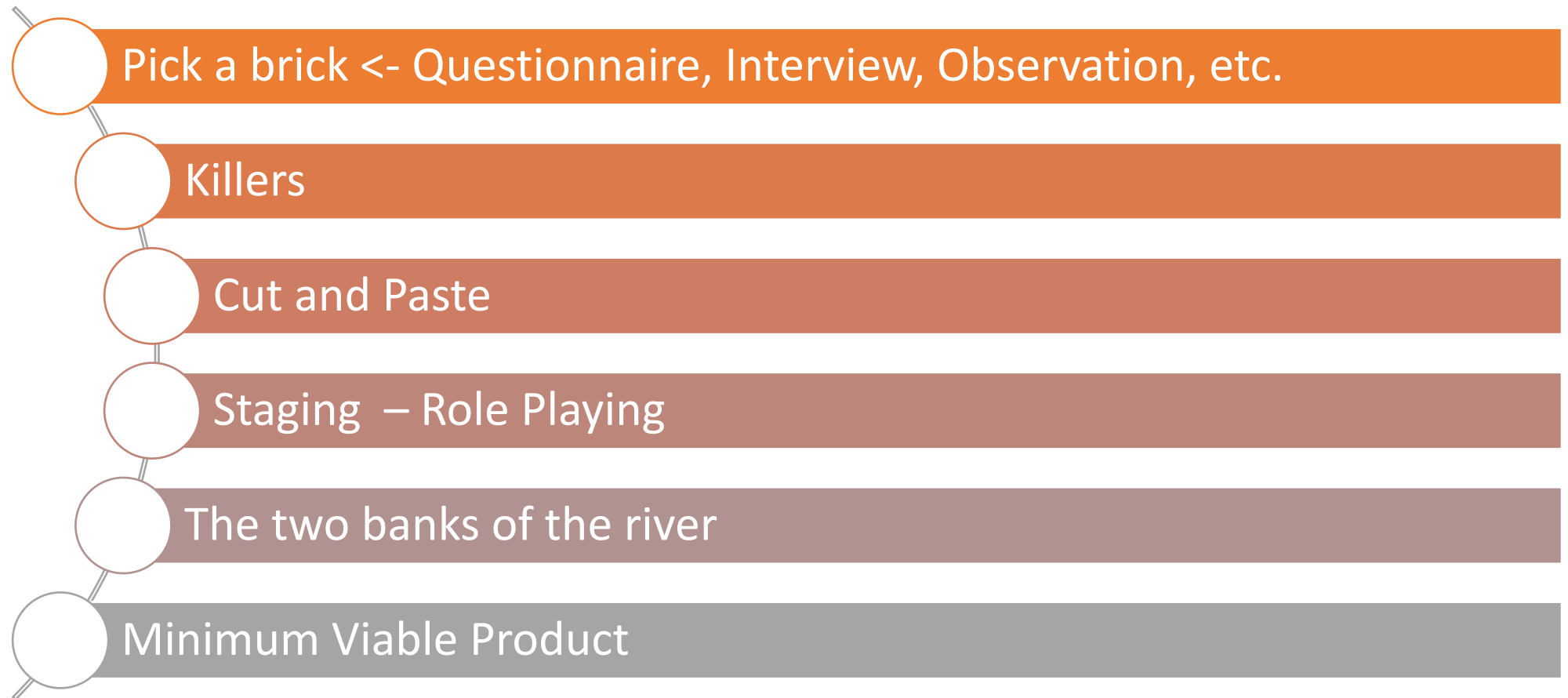
convergent

Formulate

Configure a proposal to be carried out, define the innovative solution to be built.



Formulate >> Techniques





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Some Principles

Principles of Creativity

- Alternatives
- Review of Assumptions
- Postponement of Judgment
- Fractionation or Division
- Reversal
- Entry point
- Analogies
- Empathy
- Metaphor
- Po
- Sensations



Alternatives

Principle - Any way to assess a situation is just one of many possible ways to assess it.

Proposal - Always put a minimum number of alternatives to calculate before you start

Exercise - How to divide a square into 4 equal parts?

Review of Assumptions

Principle - Any model can be restructured, i.e. the basis of the approaches can always vary.

Proposal - Technique: Why?

Exercise 1 - An engineer has the precise instructions to place 4 identical antennas on a terrain so that each of them is at the same distance from the other three. How should you place the antennas? Draw it on a sheet of paper

Review of Assumptions

Exercise 2 - Join the 9 points of the UPC only using 4 straight lines and without lifting the pencil.



Postponement of Judgment

Principle - The aim of lateral thinking is not to elaborate ideas, but a large number of ideas. Opinions and judgments (Yes/No) are characteristic of vertical thinking. A wrong idea can lead to a right solution.

Proposal - The judgement and evaluation of ideas are suspended.

Example - Ways to get water from one place to another? You have a leaky bucket

Fractionation or Division

Principle - It does not consist of dividing the problem into its natural parts (as it will tend to be grouped in the same way), but of creating artificial divisions.

Proposal - Segment the problem and partially solve it by grouping parts of it.

Example - Bus transportation. How can we divide this problem to improve service?

Reversal Approach

Principle - Forced reordering of information, not searching. It avoids the concatenation of ideas that always leads to the same vision of the problem. Overcome the fear of using erroneous premises

Proposal - Invert phrases. Its use is complicated

Exercise - Dependents serve customers; Customers serve banks; Students teach teachers

Entry Point

Principle - Point of entry: The part to which that attention is first directed

Proposal - Propose multiple entry points, before you start

Example - A method of protecting yourself from the rain when you are on the street

Points of entry:

- Umbrella discomfort
- Difficulty of umbrella when everyone uses it
- Why go out when it rains?
- What does it matter if you get wet?

Analogies

Principle - Use an analogy to explain the problem

Proposal - Steps

1. Selecting an analogy
2. Relate certain phases of the problem with analogy
3. Solving the analogy
4. Solve the problem by following the same steps of the analogy

Example - New advertising campaigns; Analogy: yellow press on television

Empathy

Principle - Understand the motivations and feelings of others.

Proposal - There is a certain amount of imagination to invent the scene that must be represented by the protagonists. Preparation time is not wasted.

Example - Imagine that you are an industrialist who produces jams that are sold on the shelves of supermarkets. The empathy method would be to put yourself in the place of the jar of jam. I put myself in the place of the jar, I see consumers passing by the aisle and I propose to make myself desirable.

Methaphor

Principle - Metaphorical thinking consists of uniting two concepts in a way that results in a better understanding of one of them.

Proposal - You can practice metaphorical thinking by answering the two great metaphorical questions:

- What does this look like?
- What doesn't this look like?

Example - Light bulb

- What does this look like? A candle, a balloon, an egg
- What doesn't this look like? An apple

Principle - Eliminate rational thinking in the creation of ideas

Proposal - PO is a word invented by Edward de Bono in 1969. The logical basis of the word "po" arises from the consideration of the asymmetric nature of self-organized information systems that create and use patterns. These systems demand the function "po". It was therefore necessary to invent the function to indicate when something is deliberately used as a provocation. Many new ideas arise by chance, accident, error or madness. We can temporarily go mad, only for 30 seconds at a time, and temporarily control the situation.

Example – PO: This course doesn't work for anything

Sensations

Principle - Using the five senses to stir up a problem.

Proposal - Think of your problem in terms of your five senses. What taste, smell, touch, appearance, sound, does your problem have? Observe your reactions to trigger new perceptions of your problem and its solution.

Example - Design a new tablet.