



CREATIVITY




Presented by Flavien Massi

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Introduction

- ◇ The topic of Innovation is at the crossroad between the Cartesian thinking (sciences and logic) and the Creativity (imagination and free spirit).
 - ◇ In this module you will be introduced with the concept of creativity and how to develop it for innovation/scientific purposes. The participants will learn how their right brain is working and how to get the best of it in their professional activities.
 - ◇ This first module aims to be interactive and playful in order to develop group spirit and stimulate individual and group creativity. Finally the training will focus on two main creativity tools: brainstorming and mind-mapping.
- 



Meet the group

Present yourself in one minute






Creativity Development

Tools & Tips






Creativity definition

- ◇ The state or quality of being creative.
 - ◇ The ability to transcend traditional ideas, rules, patterns, relationships, or the like, and to create meaningful new ideas, forms, methods, interpretations, originality, progressiveness, or imagination: the need for creativity in modern industry; creativity in the performing arts.
 - ◇ The process by which one utilizes creative ability: Extensive reading stimulated his creativity.
- 



Invent vs. Innovate

- 
- ◇ To design a new process or mechanism.
 - ◇ To produce or contrive (something previously unknown) by the use of ingenuity or imagination.
 - ◇ To create or devise (new ideas, machines, etc.).

Inventing is about creating something brand new.

- ◇ To begin or introduce (something new) for or as if for the first time.
- ◇ To make changes in something established, especially by introducing new methods, ideas, or products.

Innovating is about introducing something new.





“

Left brain

I am the left brain.
I am a scientist. A mathematician.
I love the familiar. I categorize. I am accurate. Linear.
Analytical. Strategic. I am practical.
Always in control. A master of words and language.
Realistic. I calculate equations and play with numbers.
I am order. I am logic.
I know exactly who I am.

Right brain

I am the right brain.
I am creativity. A free spirit. I am passion.
Yearning. Sensuality. I am the sound of roaring laughter.
I am taste. The feeling of sand beneath bare feet.
I am movement. Vivid colors.
I am the urge to paint on an empty canvas.
I am boundless imagination. Art. Poetry. I sense. I feel.
I am everything I wanted to be.



Left Cortex Vs. Right Cortex



???





Supercomputing

◆ The fastest supercomputer in the world is the Sunway TaihuLight located in Wuxi region (China). This is nearly three times faster as the previous holder of the record, the Tianhe-2 (China).





Exercise

The power of your brain





Memory / recall / create

◇ Creativity and innovation are directly linked to your (acquired) knowledge and personal experience and way of thinking.

◇ To create you should:

1. *Store information*
2. *Analyse the information*
3. *Recall the information*
4. *Use/Apply/Transform the initial information into something NEW.*



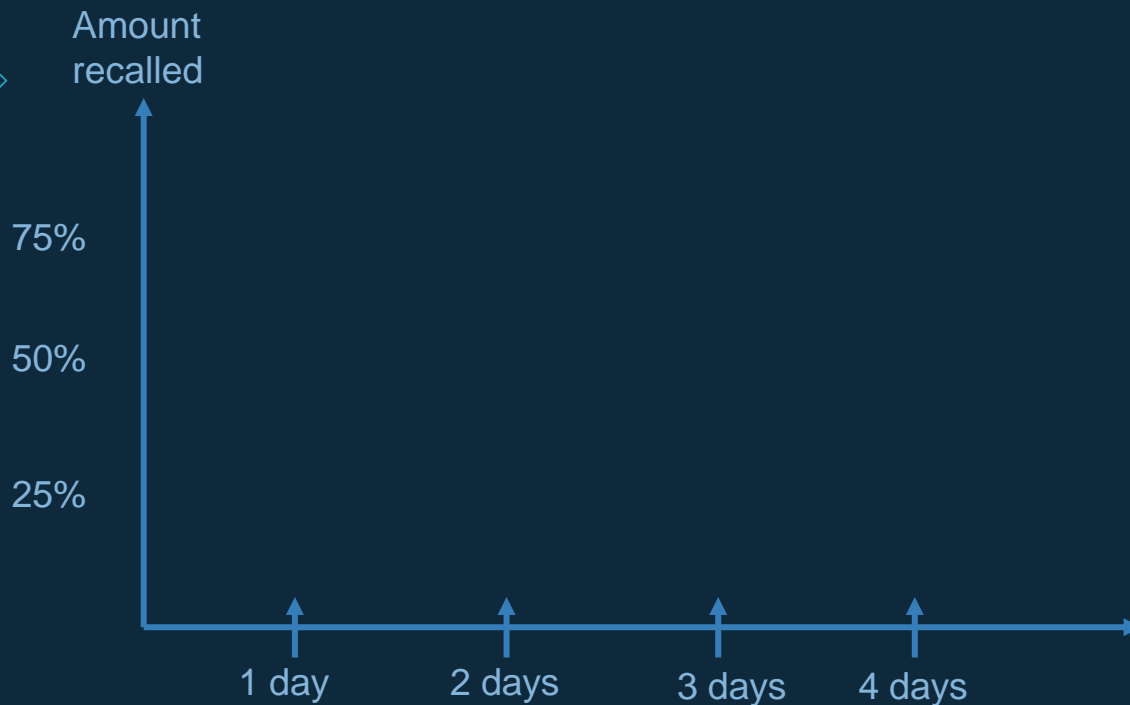


Memory / recall / create

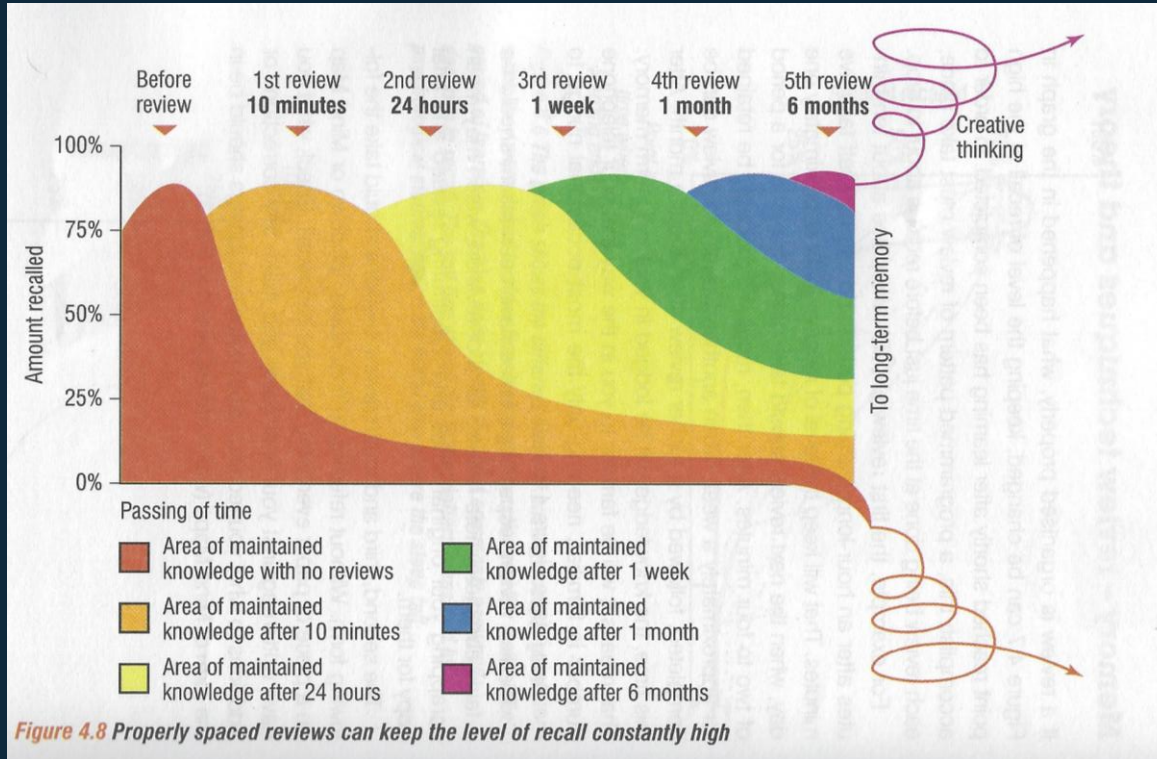




Memory / recall / create



Memory / recall / create



From the book
“Use your head”

Written by Tony
Buzan





Exercise

Test your memory





Test your memory

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.



Test your memory





Bisociation and association

- ◇ Arthur Koestler is a psychologist who first introduced the concept of bisociation: The result of the merging of two distinct 'worlds' creates a third world never imagined before.
- ◇ Example: I-mac[®]





Bisociation and association

Mashable



ebay





Word/image association

- ◇ The principle of association is also a pillar of creativity. This consists in favouring logical association to find solution and have new ideas: words, images, concept, world, etc.
- ◇ You can stimulate your creativity by ‘playing’ with word / image / concept distortion. It develop your imagination and creativity skills.





ASCI MAT

Mood board

Ludo-Tech





Ideosphere



◇ The ideosphere is the place where thoughts, theories and ideas is thought to be created, evaluated and evolved.

- In "Chance and Necessity", 1970, Jacques Monod hypothesized that ideas can have their own autonomy and, as organic beings, can reproduce and multiply.
- In 1976, in "The Selfish Gene", Richard Dawkins discusses the concept of ideosphere and writes: "When you plant a fertile idea in my mind you literally parasitize my brain, turning it into a vehicle for the spread of this idea."

◇ The synchronicity can explain the concept of ideosphere. It is like ideas are floating in the air and people able to catch them contribute to increase the overall level of knowledge of the specie.





Creative behaviours

Listen

Accept judgment

Spontaneity

Concrete



No auto-censorship

Association

Share ideas





Creative behaviours

O riginality

F luidity

F lexibility





Tool n°1

The springs of creativity





The springs of creativity

- ◇ Creativity is not only a question of individual talent, it largely depends on the managerial methods and the working conditions.
- ◇ According to T.M. Amabile, researcher at the Harvard Business School of Boston, creativity emerges from the stimulation of six factors.
- ◇ When implemented these factors acts as true creativity springs.

Objective and context:

- ◇ The method is dedicated to a working team which wants to improve or create a creative environment.





The springs of creativity

Challenge

Challenge the team and put them under a 'positive tension'.

Autonomy

Free to choose the medium to achieve the objectives.

Pressure

Shorten time and increase financial constraints to create an emergency situation.

Diversity

Create team with mix skills, competences and experiences. It will increase the originality of ideas.

Encouragement

At every steps of the process even if the results are still not obtained yet.

Emulation

Create positive emulation between participants to generate creativity.





Tool n°2

The creative process





The creative process

◇ Finding ideas is not spontaneous. The looping is a visual representation of the creative process. It outlines the four successive stages necessary to create:

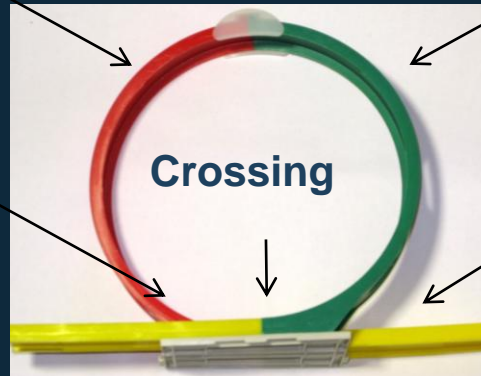
Convergence

Divergence

Impregnation

Sorting of ideas

Problem to solve



To the innovation





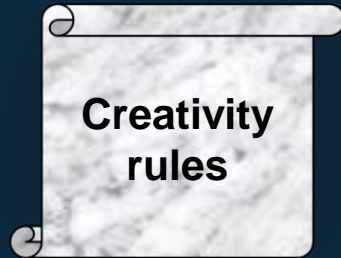
Tool n°3

The creativity meeting





The creativity meeting



Warm-up

Introduction of
problem

Production of
ideas

Sorti
ng

Search for
concept

Sorti
ng





Tool n°4

Discovery matrix





Discovery matrix

- ◇ The discovery matrix is a dual entry chart which permits the intersection of two different types of information variables.
- ◇ The variables are chosen according to the subject to be treated. These are two different kinds of characteristic to be put in relation

	Variable 1	Variable 2	Variable 3	Variable 4
Variable A	xXx	xXx, xXx, xXx	xXx	xXx
Variable B		xXx	xXx, xXx	
Variable C		xXx	xXx, xXx, xXx	xXx
Variable D	xXx, xXx	xXx, xXx	xXx	





Tool n°5

The word at random





The word at random

◇ Taking distance with the word at random is beneficial to deal with the problem taking original solving angles.

Word at Random	Divergence 1 (Free association)	Divergence 2 (Initial association or problem)	Divergence 3 (Concrete ideas to solve the problem)
Word characteristics			
Word function			





Tool n°6

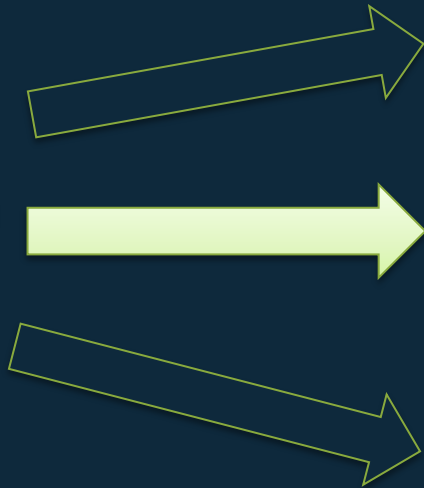
The analogy





The Analogy

**Problem
to solve**



Universe 1

Universe 2

Universe 3





Other creativity tools

◇ It exists many other creativity methods and tools :

- Six hats method (Edward de Bono)
- Brainstorming
- Mind Map (Tony Buzan)
- Projective collage

◇ Creativity has no limitation and every exercises to open your mind and develop your imagination are welcome in the creativity process.





Brainstorming



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Overview

- ◇ What is brainstorming?
- ◇ Why use brainstorming techniques?
- ◇ Brainstorming is not a structured meeting
- ◇ The process of brainstorming
- ◇ The environment
- ◇ Setting the scene
- ◇ Rules for the session
- ◇ A brainstorming technique
- ◇ Affinity analysis
- ◇ Summary and future action





What is brainstorming?

- ◇ Brainstorming is a means of generating ideas.
- ◇ Brainstorming can be used to identify alternatives, obtain a complete list of items and to solve problems.
- ◇ There are a variety of brainstorming techniques.
- ◇ The common principle of brainstorming is to set aside the restrictive thinking processes so that many ideas can be generated.



The logo for ASCTMAT is a large blue hexagon with a white circle in the center containing a stylized 'A'. To its right is a smaller hexagon with a thumbs-up icon. Below the main logo is a hexagon with a smartphone icon and another with a magnifying glass icon. The text 'ASCTMAT' is written in white across the bottom of the main logo.

When to use it?

- ◇ You can use brainstorming in a project when:
 - Defining the objectives and the problem to solve as well as in identifying alternative solutions.
 - Identifying all potential risks on a project.
 - Developing the Work Breakdown Structure (identifying all the deliverables and work items).
 - Dealing with difficult problems that arise during the course of the project.



The logo for ASCTMAT is a large blue hexagon with a white diamond in the center, containing a stylized 'A' and 'M'. It is surrounded by smaller hexagons containing icons: a thumbs up, a smartphone, and a magnifying glass. The text 'ASCTMAT' is written in white across the middle of the large hexagon.

Why using this technique?

◇ Brainstorming can:

- *break through traditional thinking about a problem.*
- *generate new ways of thinking.*
- *provide an environment for building on new ideas.*
- *reduce the tendency to prematurely discard new ideas.*
- *facilitate team building.*
- *encourage team problem solving.*





Not a structured meeting

◇ Normal meeting : ◇ Brainstorming:

- ◇ Fixed agenda
- ◇ Chairperson
- ◇ Minutes
- ◇ Action items

- ◇ Idea generation
- ◇ Issue generation
- ◇ Divergent thinking
- ◇ Open format





The process of brainstorming

- ◇ The environment
- ◇ Setting the scene
- ◇ Rules for the session
- ◇ Running the brainstorming session
- ◇ Affinity analysis
- ◇ Summary and further action





The environment

- ◆ **Location:** preferable to be held away from normal place of work
- ◆ **Room:** natural light, plenty of space
- ◆ **Materials:** whiteboard and pens. Provide a pack of post-it notes and pen for each attendee





Setting the scene.

- ◇ Explain the brainstorming technique.
- ◇ Specify the rules.
- ◇ Loosening up: use a free thinking exercise and/or a practice brainstorming session.
 - The facilitator provides exercises and determines when the participants are ready to proceed with the technique.





Rules of the session

- ◇ Any idea is valid
- ◇ No judgement or criticism allowed: Replace the “No, but..” by “Yes, and...”
- ◇ Mobile phones switched off
- ◇ Any eccentricity is welcomed
- ◇ Do not sort ideas during the creativity process.





A brainstorming technique

- ◆ Present the problem or opportunity for which brainstorming is being applied
- ◆ Allocate 3-5 minutes to write on the post-it notes as many ideas as possible – one idea per note
- ◆ Each person quickly writes their thoughts onto the post-it notes regardless of how impractical, outrageous, extreme, crazy they may be (do not filter the ideas)






Affinity analysis

- ◇ Each person in turn sticks their post-it notes on the whiteboard, putting their note near to an idea that is similar to theirs. This should result in clusters of post-it notes representing similar ideas.
- ◇ Review the ideas by cluster. For each type of idea ask the group “How could we make this work?” Discuss each variation of the idea and refine to develop a possible solution.





Summary and future action

- ◇ Write up a summary of each type of idea/solution presented.
 - ◇ Determine an action plan for working through the ideas.
 - ◇ The action plan may be to test or further research the alternatives identified to select a shortlist of the most suitable solutions for further evaluation.
- 



Mind Map



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Overview

- ◇ Description
- ◇ Characteristics
- ◇ Uses
- ◇ Benefits
- ◇ Radiant thinking
- ◇ Basic Ordering Ideas (BOI)
- ◇ How to create Mind Map






Mind map


- ◇ The elements of a given mind map are arranged intuitively according to the importance of the concepts, and are classified into groupings, branches, or areas, with the goal of representing semantic or other connections between portions of information.
- ◇ By presenting ideas in a radial, graphical, non-linear manner, mind maps encourage a brainstorming approach to planning and organizational tasks.

Wikipedia



Characteristics

◇ Mind maps are, by definition, a *GrApHiCaL* method of taking notes. The visual basis of them helps one to distinguish **words** or  .

◇ They generally take a hierarchical or tree  **branch** format, with ideas branching into their subsections.

◇ Mind maps allow for greater **creativity** when recording ideas and information, as well as allowing the **note**-taker to associate words with visual representations.





Uses



- Reference book
- Textbook
- Papers
- Journal



- Presentation
- Meeting
- Seminar / Conference

- Preparation
- Note taking

Mind Maps

Uses



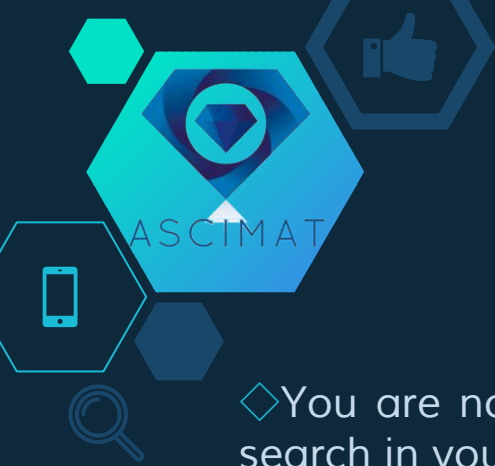
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Benefits

- ◇ Information can be inserted easily
 - *Items can be mapped as thoughts occur or when new information is found*

- ◇ Can be converted to a standard outline
- ◇ Take note and focus on main concepts, ease the learning process.
- ◇ Favour the recall of information and to review.
- ◇ Stimulate the creativity process
- ◇ Can reveal problem and find solution.





Why using this technique?

- ◇ You are not accessing the key information by using a word search in your large database (e.g. Brain)
- ◇ Your thoughts are not linear
- ◇ The free association you are making with pictures, sounds, smells and feelings are anarchist and open a wider imaginary around a given word.

- ◇ The mind map is just the graphical representation of your thoughts, then it will help you to store information, analyse them, recall and generate new ideas.



Radiant thinking



LION



Yellow

Cute





Basic Ordering Ideas (BOI)

- ◇ What knowledge is required to achieve my objectives?
- ◇ If this were a book, what would the chapter headings be?
- ◇ What are my specific objectives?
- ◇ What are the 7 most important categories in that subject?
- ◇ What are the answers to my seven basic questions: Why? What? Where? Who? How, Which? When?
- ◇ Is there a larger category that cover several of the points raised?



How to create Mind Map

A4



- ◆ Central image is crucial for the Mind Map
- ◆ At least 3 colours for the central image
- ◆ Use your own colour code

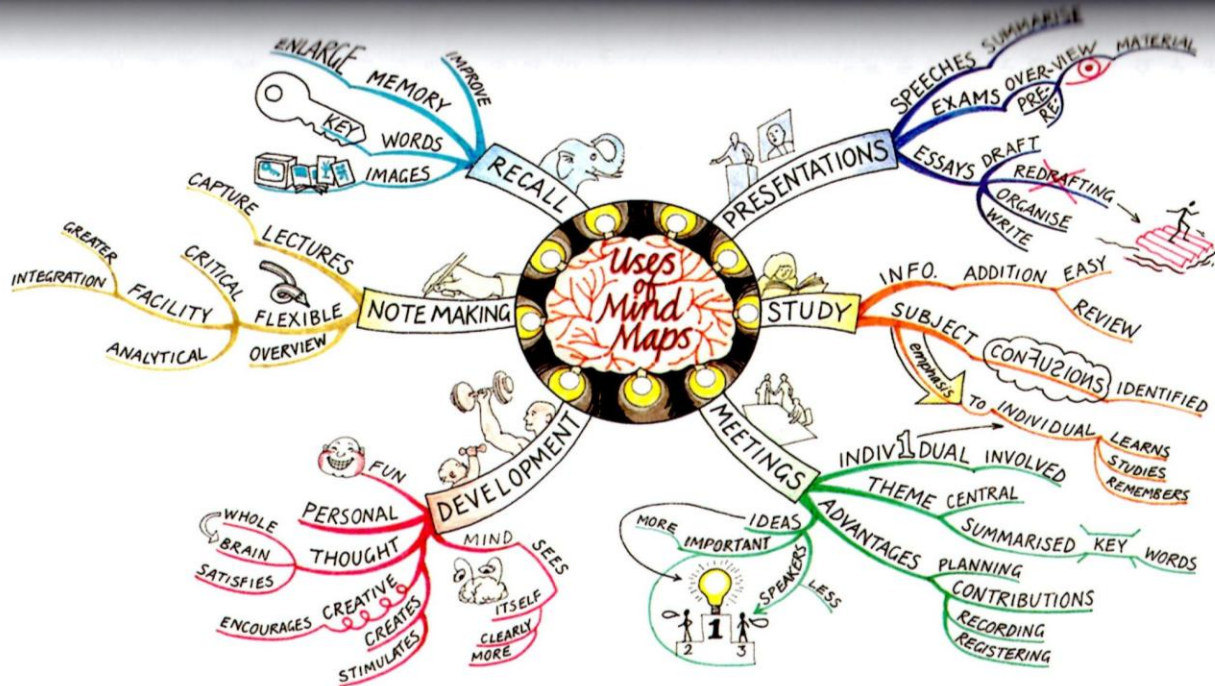
How to create Mind Map





ASCIMAT

Examples





Exercise

Mindmap the MSCA-IF call

