

# Green Innovation@Schools

*Methodological guidelines for co-creation process and lab-sessions*

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&

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Participants of Innovator Catalyst using tools of Climate-KIC Visual toolbox, Valencia (2014)

**Green Innovation@Schools** is a Cross-KIC project developed in collaboration with

# Why this guideline?

*The idea of system innovation has been widely diffused in academia and business to refer to major transformation in national and regional economies through technological breakthroughs, reorganizations of industries and the implications of a globalised economy.*

*In the field of climate change, the Climate-KIC has widely applied elements of system innovation and transition management by combining other general project and innovation management elements. The Roadmap of Knowledge development (next page) shows how some of the key education programmes such as Pioneers into Practice, the Innovator Catalyst and summer schools have adopted this approach during the last years. Simultaneously, those experiences have contributed to understand easy-going mechanisms for applying simple concepts and science-base tools to day-to-day practice in projects and actions related to participatory capacity building. We have learnt how the Visual toolbox provides adaptable and flexible tools and methods that are easy to transfer and combine with other tools as part of modular formats based in co-operative learning methods and peer-to-peer activities*

*All these experiences, the continuous process experimentation, review and evaluation as well as the interaction with broad academic community have been the inspirations for the use of Visual toolbox in the school context. Thus, the Visual toolbox for System Innovation developed by Climate-KIC will be used as a framing element that will allow the modular combination of other existing tools and knowledge provided by different partners of the **Green Innovation@School** project.*

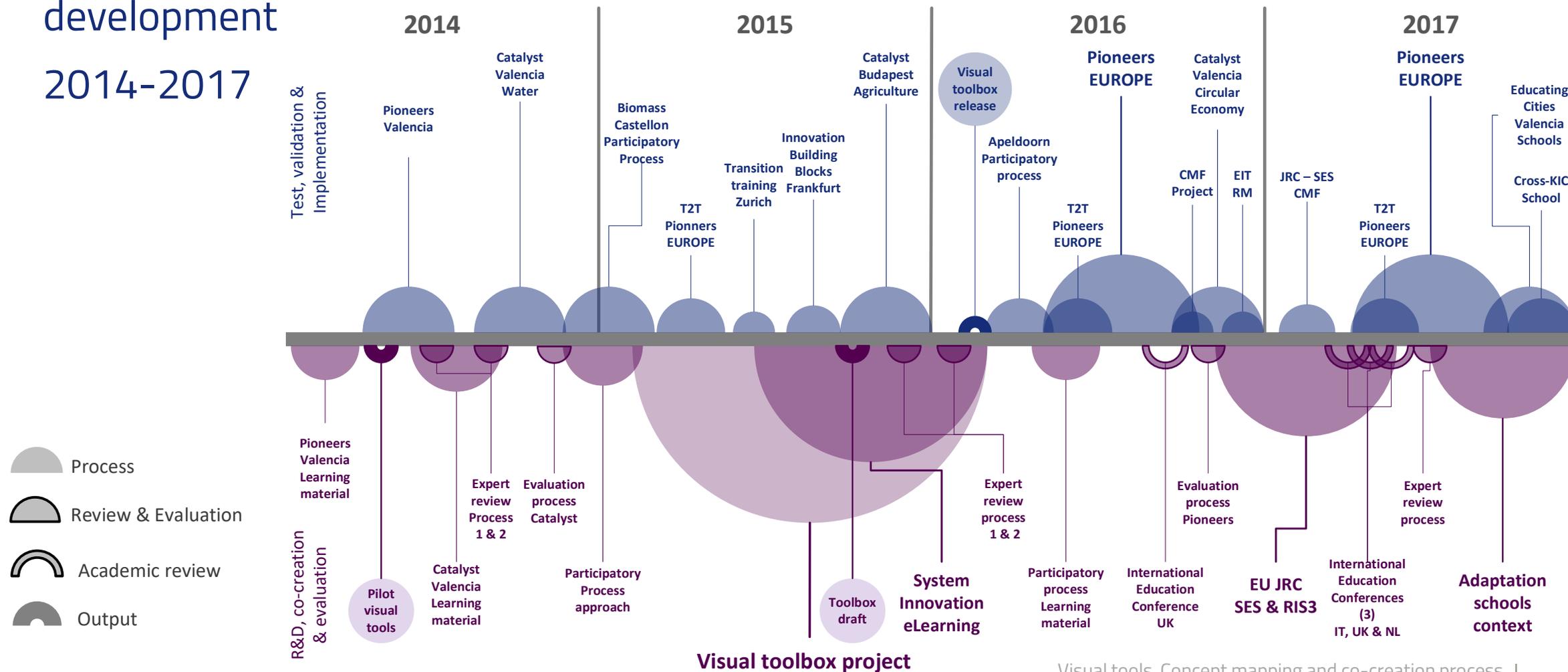
*This Methodological Guidelines aim to contribute to the better understanding of key elements of co-creation, content development and participatory process. They can be used as a supporting tool for the application of system innovation in the school context at both, project level and organizational school level.*

# System Innovation

## Roadmap of knowledge development

2014-2017

*The creation of Visual toolbox and evolution of the methodology*



Visual toolbox project

Visual tools. Concept mapping and co-creation process |

# Content



1. [Visual tools. Concept mapping and co-creation process](#)
2. [Working Plan 2017](#)
  - [Task 2: Co-Creation and Adaptation](#)
  - [Task 3: Labs sessions and Demonstration workshops](#)
3. [Briefing document: Preparing educational case studies](#)
4. [References & further information](#)

# Visual tools

*Learning process based in concept mapping and practice-base knowledge*

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July 2017

## **Outline**

1. Key conceptual elements
2. Active-blended format
3. Concept mapping tools on System Innovation
4. System Innovation.
  - Basic concepts
  - eLearning platforms
5. Additional application : participatory assessment

# Key conceptual elements



The use of **concept mapping** as a meaningful learning method to achieve conceptual change amongst learners. While it is not a “magic bullet”, concept mapping and the use of the Vee diagram can be effective tools. *Novak (2002)*



**Practice-based knowledge.** The materialization of learning process into practice-base knowledge facilitate a deeper and longer-lasting connection between complex concepts (*Matti and Rietdorf, 2017a*)



**Experiential learning.** The continuous practices of looking at a problem from different perspectives by being open to the way an experience can change current understanding while being open to incorporate how others have perceived the same experience (*Fazey et. al., 2005*)



In order to make learning environments more effective, efficient and engaging on a large and sustainable scale a **smart learning environment** requires effectiveness, efficiency, has to be scalable and autonomous. *Spector (2014)*

# Active-blended format

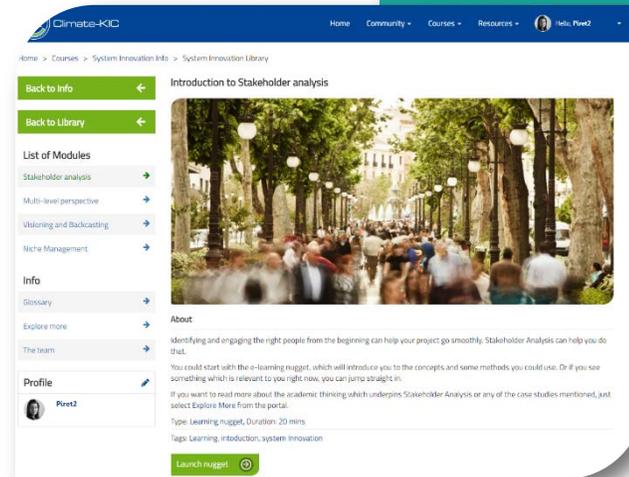
**Flipped learning.** Classroom and eLearning activities will be introduced as a mechanism to combine cooperative learning processes with group assignments

**Seamless learning.** The learning process can involve different types of activities, at different times and with multiple resources



Participatory workshops

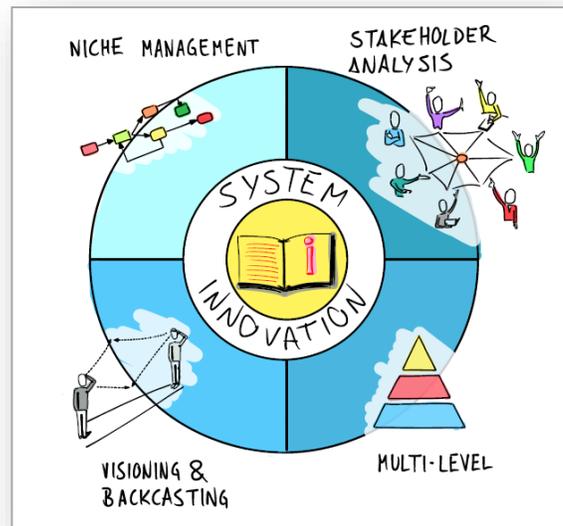
Multiple locations supporting a mobility program



eLearning platform

# Concept mapping tools on System Innovation

## The Visual Toolbox

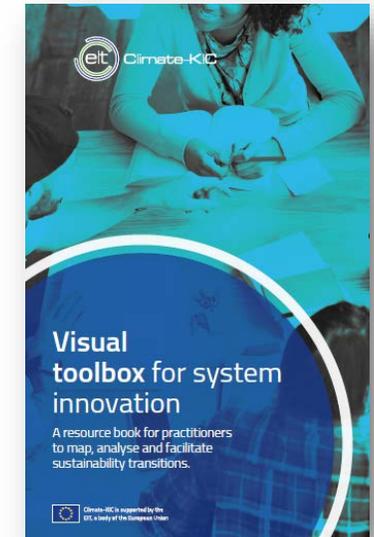
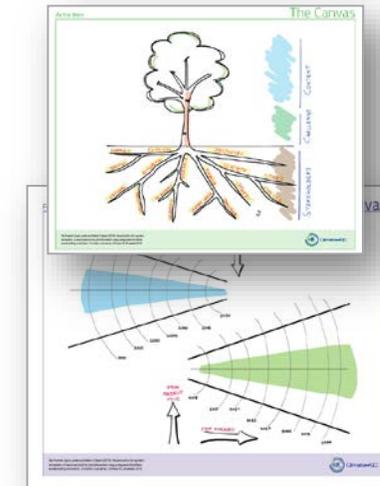


De Vicente Lopez, J., & Matti, C. (2016). *Visual toolbox for system innovation. A resource book for practitioner to map, analyse and facilitate sustainability transitions*. Brussels: Climate KIC

### Four topics/ 16 tools

1. Stakeholder analysis
2. Multilevel perspective
3. Visioning and backcasting
4. Niche management

Booklet



Workshop application

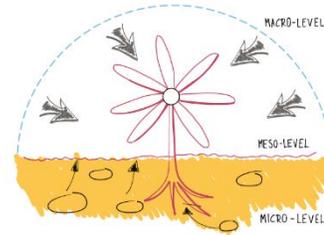
### Multiplatform approach

1. Booklet publication
2. System Innovation eLearning module
3. eLearning & Online Library of resources



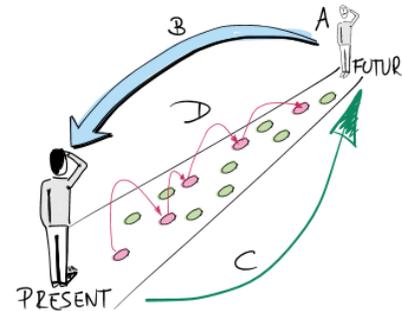
# System Innovation

## Basic concepts



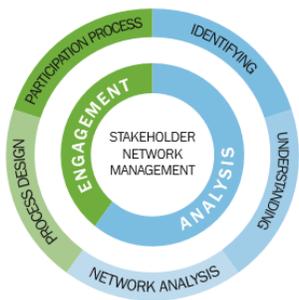
### Multilevel perspective

The Multi-level perspective is an analytical approach to describe processes of innovation and transitions in socio-technical systems. It can be used to better understand the relevant context of system innovation projects



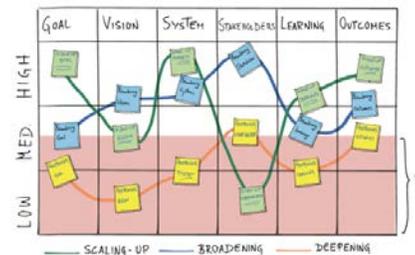
### Visioning & Backcasting

Envisioning the desired future allows to step back and identify and assess which changes and actions would be necessary for that future to come true. It can be used to help planning and setting an agenda for changes.



### Stakeholder management

To identify and understand the stakeholders, their behaviours and relationships and the network performance. It can be used to facilitate their involvement and engagement during decision making processes.



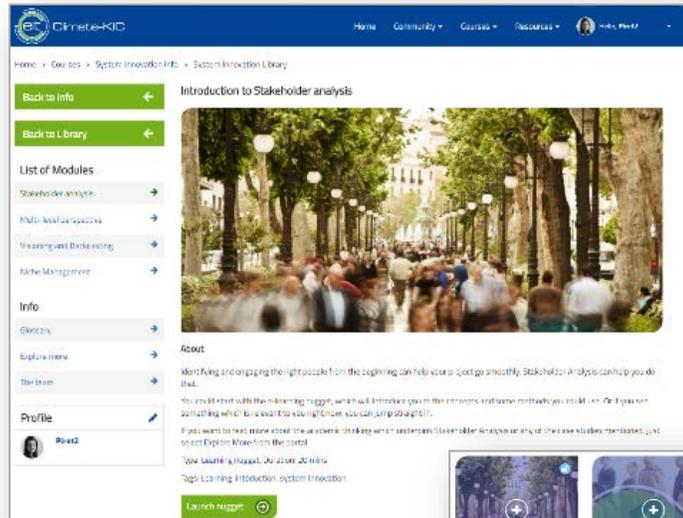
### Niche management

A combination of elements from traditional project management and more innovative approaches. It can help keeping a project on track with societal change and embrace the actions needed to trigger transformational change.

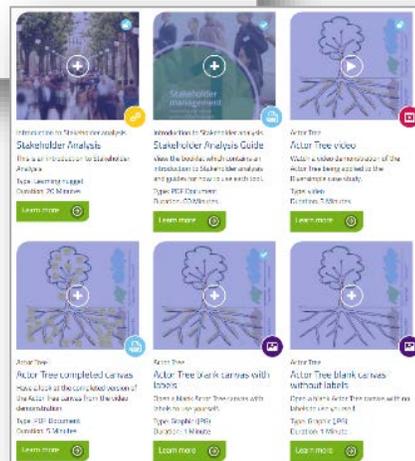
# System Innovation

## eLearning platforms

System Innovation eLearning

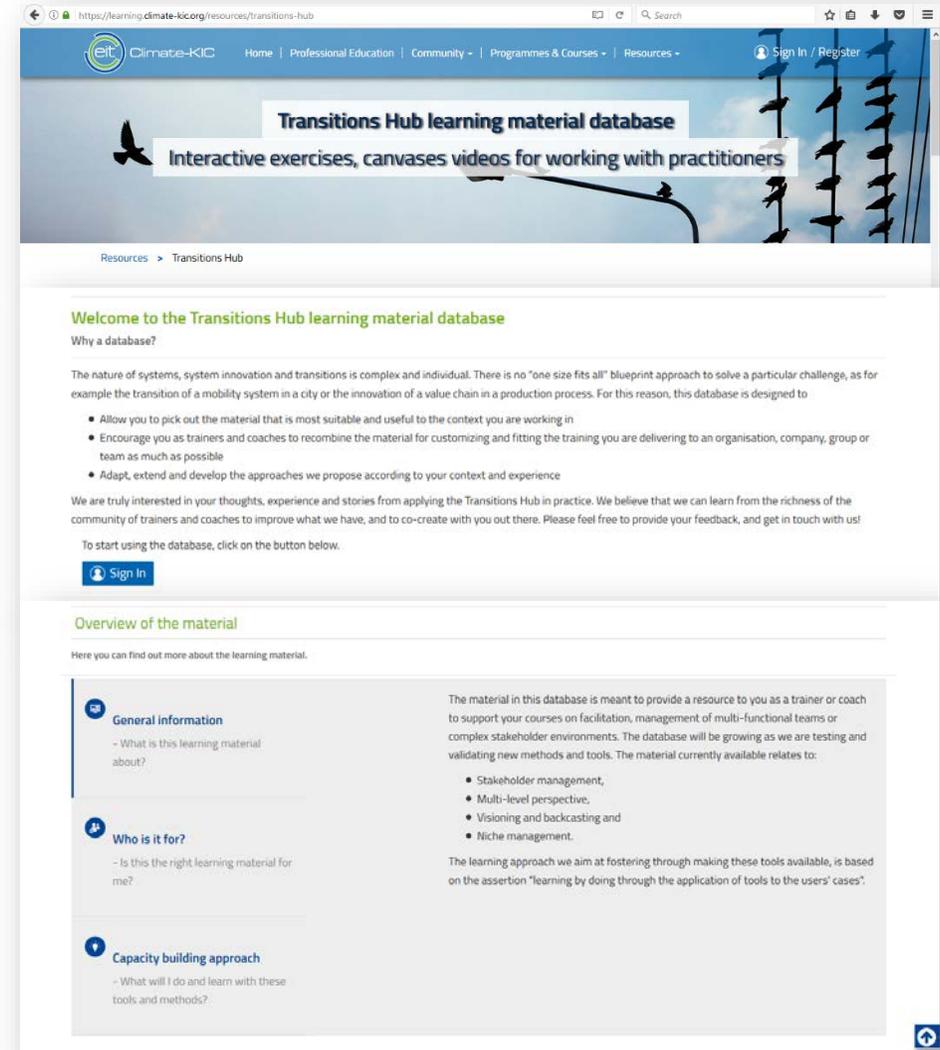


**Transition Hub library.**  
*This platform will be used for Green Innovation@Schools during 2017.*



*eLearning & Online Library of resources*

<https://learning.climate-kic.org/resources/transitions-hub>



<https://learning.climate-kic.org/courses/system-innovation>

# Additional application

Participatory assessment for participatory teaching and learning in schools context

*Simple explanation (videos) & easy-drawing canvas*



Team of Cyprus Energy Agency – Capacity Building workshop (Brussels, 2016)

*Note: for more information on Participatory assessment see Hickey and Itow (2012)*

*Simple methods for content analysis & creating infographics – Dashboards of bottom up indicators*

Dashboard poster for reporting  
 Example of application of Visual tools for co-creation of bottom-up indicators  
 Transitions Hub- Climate KIC

**Example of stakeholder analysis tool**

**Example of system analysis tool**

**Example of reporting approach and infographics**

Improving sustainability in Valletta, Malta  
 Bottom up indicators gathered through participatory process

**Stakeholder analysis**

Adaptability, affinity and interest

**Cluster analysis**

Stakeholder ranking by attributes  
 Stakeholder clusters by attributes

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**Context map**

Key socio-economic drivers and factors

**Analysis & Codification**

References:  
 De Andrade Soares, L., & Nanni, C. (2016). Visual toolbox for systems innovation: A heuristic toolkit for practitioners to use.

# Green Innovation@Schools Working Plan 2017

## ***Outline***

1. ***Task 2: Co-Creation and Adaptation***
2. ***Task 3: Labs sessions and Demonstration workshops***

## Task 2

### *Co-Creation and Adaptation*

#### *Contributors:*

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#### **Outline**

1. *Objectives and actions*
2. *Resources*
3. *Deliverables*
4. *Modular format based in System Innovation Approach*
5. *Common Module - Roadmap for knowledge development*
6. *Co-creation in practice*
7. *Co-creation process*
  - *Example of stages and actions*
  - *Prototype configuration*
    - *Edition & Prototyping*
  - *Prototype examples*
    - *Adaptation and selection of tools from the System Innovation Toolbox*
    - *Pedagogical approach*

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# Objectives and actions



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## Objectives:

- To integrate regional examples on Circular Economy
  - To adapt existing knowledge and methods based in a modular approach using the visual toolbox as a basic element
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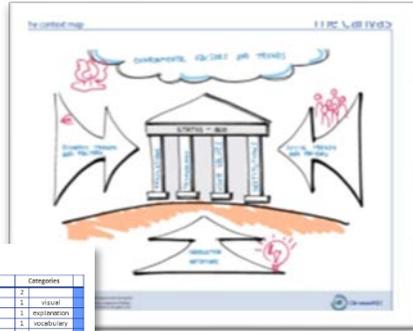
## Actions

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1. **Methodological support for integration:** Technical advice and desk research on the results from different teams (Transitions Hub Climate KIC)
  2. **Contextualization and adaption:**
    - **DACH:** Testing and validation of the adapted methodology based in the Climate Pre-Entrepreneurship School Programme (Myclimate)
    - **Valencia:** Adaption of tools for running participatory local assessment in the schools (Universitat de València)
    - **Bologna:** The SILS will adapt the common module materials by including the needs and perspectives of teachers and scientists and examples taken from circular economy issues (ASTER/ AESS/CNR-IBIMET)
    - **EIT RM:** Contextualization of the visual tools on real examples connected to societal challenges, circular economy and RM-related future opportunities. This phase will be realised with the help of RM Ambassadors (ASTER/ CNR EIT Raw Materials)
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# Resources

Context map tool  
– original canvas



Inputs by category and typology

Category / stickers	Act	Change	Interact	Learn	Total
1- Design related issues	4	3	2	4	13
2- Topics	1	1	1	1	4
3- Additional work to do when using it	1	1	1	1	4
4- Feedback application problems	1	1	1	1	4
<b>Total</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>11</b>	<b>29</b>

Credential cards

Sections	Task	Categories	
ACTIVE	Which are the needs? The objectives?	2 visual	
	Picture of actor?	1 visual	
	What is the mechanism of factors?	1 explanation	
	Label what's in the bubble?	1 vocabulary	
	Who writes the problem?	2	
	Define the problem before by discussing with the class	7 previous	
	Actor	what is the responsibility actor	2
	what is the objective	1	
	how	why questions	1
	how	why further how why not	1
WHERE	why	Explicits	1
	why	Resources (what do I need)	1
	opportunities	1	
	Problems / how relevant	1	
	expect	students to find understand	9
	Problems / how relevant	1	
	Problems / how relevant	1	
	Problems / how relevant	1	
	Problems / how relevant	1	
	Problems / how relevant	1	
WHEN	when	problems to be faced	1
	relate	network	1
	relate	power	1
	influence	attitudes	1
	influence	simple language	1
	interest	question format	1
	interest	simple and direct terms	1
	interest	understanding for students	9
	interest	understanding for students	1
	interest	understanding for students	1
WHY	why	Problems / how relevant	1
	why	Problems / how relevant	1
	why	Problems / how relevant	1
	why	Problems / how relevant	1
	why	Problems / how relevant	1
	why	Problems / how relevant	1
	why	Problems / how relevant	1
	why	Problems / how relevant	1
	why	Problems / how relevant	1
	why	Problems / how relevant	1

Specific design issues

Design Issues	Act	Change	Interact	Learn	Total
conceptual	1	1	1	1	4
expansion	1	1	1	1	4
complexity	1	1	1	1	4
visual	1	1	1	1	4
vocabulary	1	1	1	1	4
<b>Total</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>20</b>

Summary of proposed changes for credential cards



**Green Innovation@Schools**  
Methodological guidelines for co-creation process and lab-sessions

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Green Innovation@Schools is a project developed in collaboration with FlowHub

Guidelines Green Innovation@Schools 1.0



1. "Visual Toolbox for System innovation" methodology
2. Transition Hub library  
(<https://learning.climate-kic.org/resources/transitions-hub>)
3. Summary Kick-Off workshop in Amsterdam
4. Green Innovation@Schools Methodological guidelines for co-creation process and lab-sessions Version 1.0
5. Pedagogic approach (Partners):
  - RM@Schools (EIT RM Ambassadors at Schools )
  - Myclimate
  - Universitat de València
6. Case studies (Partners):
  - Italy Climate-KIC (SILS) & EIT Raw materials (RM@Schools)
  - DACH (My Climate)
  - Valencia (Universitat de València)

# Deliverables



**Prototype:** proposal of combined tools, assignments and case studies following specific learning goals

## Prototypes:

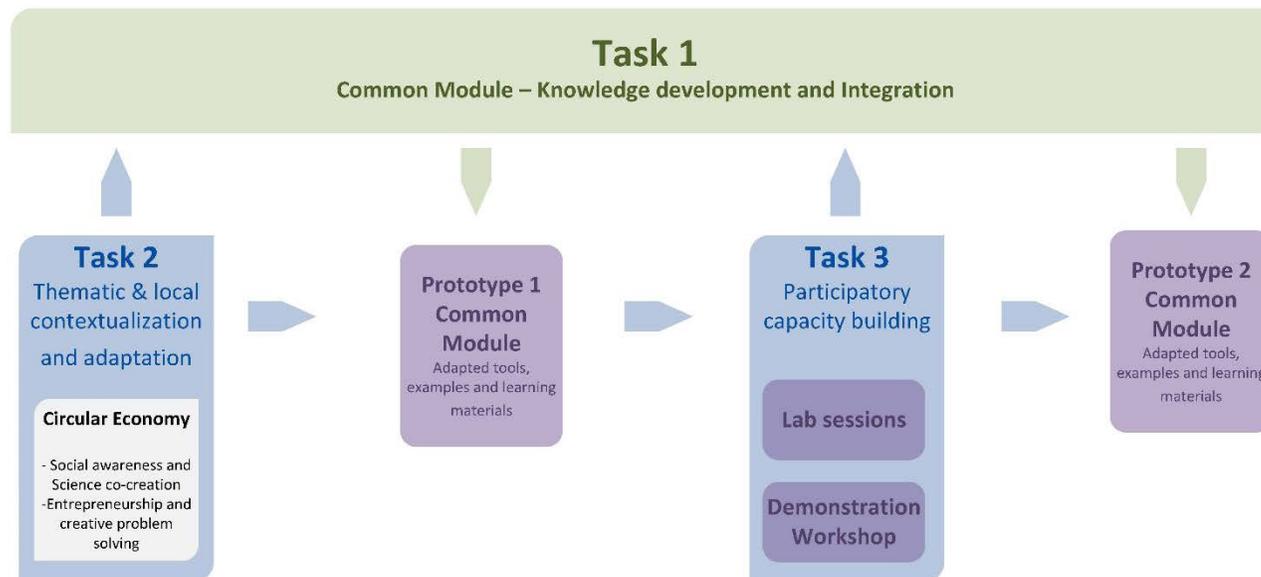
### 1. Prototype 1 (Before Lab session).

Combination of:

- Adapted tools from Visual toolbox
- Tools/ methods from partner
- Case study

### 2. Prototype 2 (updated with the results provided after lab session on Task 3)

## Common Module - Cross-KIC Working plan and relations between Task 1-3



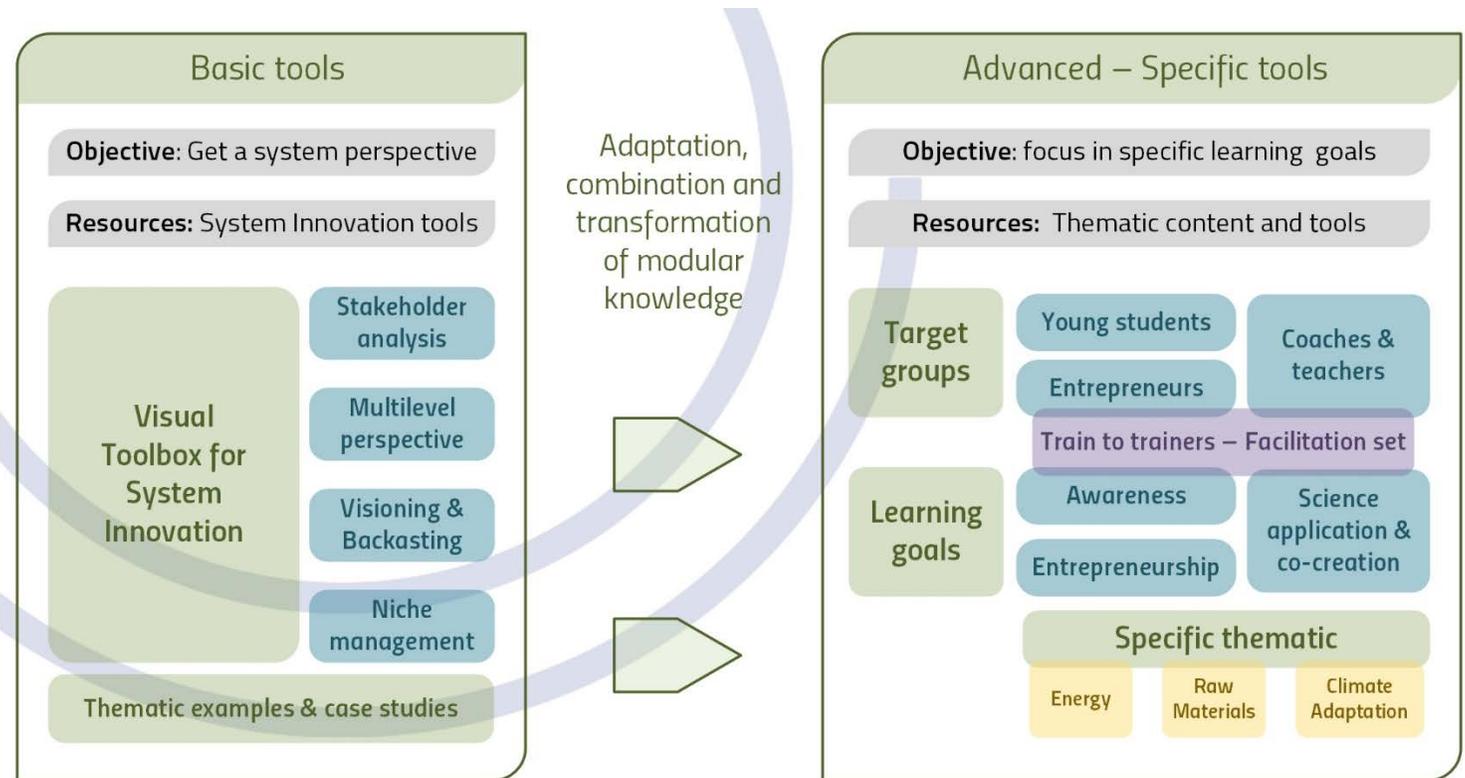
## Recommendations for learning formats:

- Different context of application (e.g. Social awareness, Science co-creation or Entrepreneurship and Creative problem solving )
- Formats of the activity (e.g. classroom activity, project activity, individual or group activity...)

# Modular format based in System Innovation Approach

## Two combined components

- Basic tools from the **visual toolbox** are suggested to provide the overall system perspective
- More specific tools, methods and local cases are integrated by considering
  1. **Contextualization** to specific topics
  2. **Partner approach** based on different type of learning goals: Entrepreneurship, Social awareness, Science application

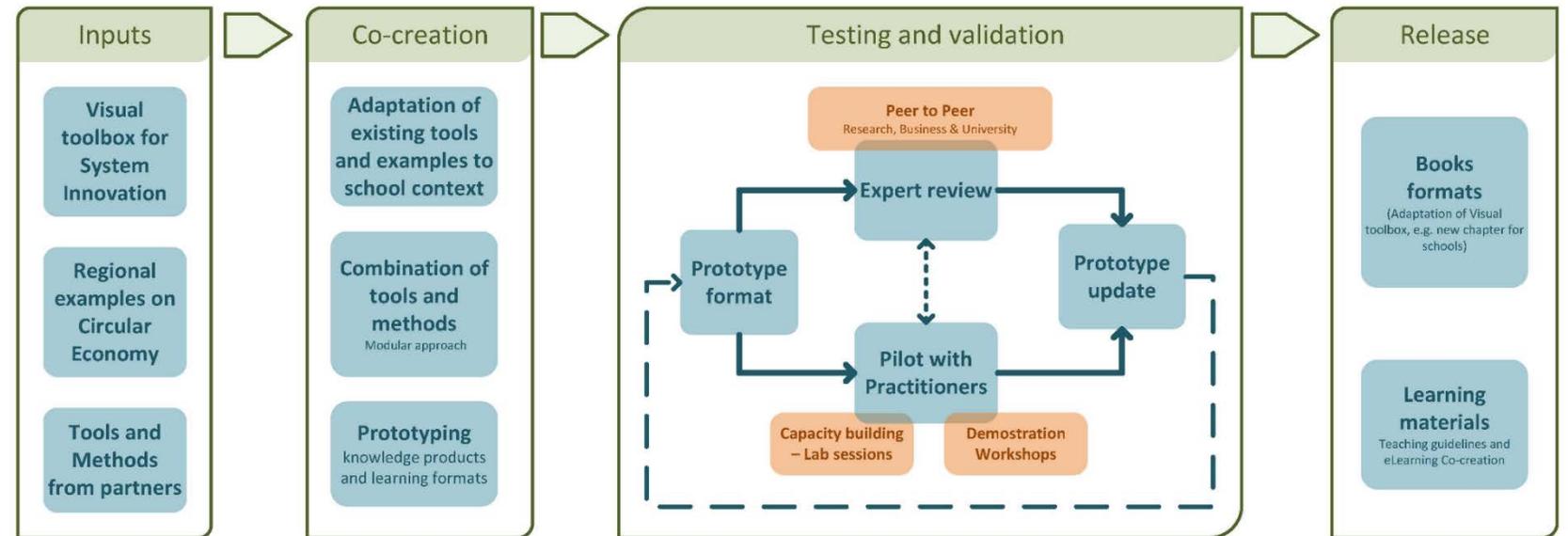


# Common Module

## Roadmap for knowledge development

### Knowledge development process

- Adaptation of existing knowledge and co-creation activities (prototyping) are combined with capacity building and peer-to-peer activities (Pilots and expert review).
- Continuous process of learning by doing with target groups and final users (i.e. teachers and students)
- Tested and validated tools, methods and learning roadmaps are release as standard learning materials in multiple formats



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# Co-creation in practice

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## What is co-creation?

Co-creation is a management initiative related to creative thinking and problem solving. It brings together ideas and perspectives from experts, managers and users. The main value relies in the contextualization of the creation process through experiential learning and experimental activities.

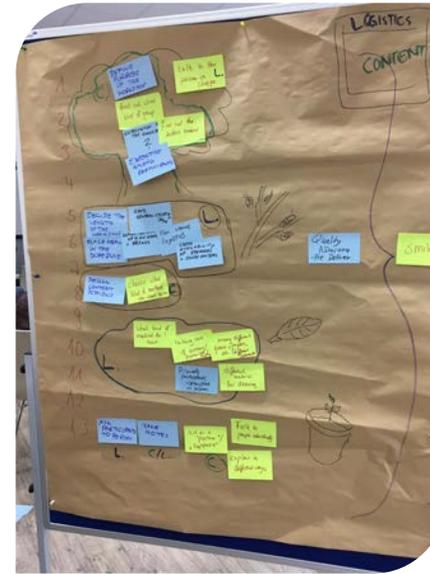
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**Suggestion:** Watch the video "Draw how to make a toast" A simple and fun introduction to Systems Thinking by Tom Wujec

<https://www.drawtoast.com/index.html#.WX8-V9Pyib8>

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Example of workshop lab-session. Colours indicates different activities as logistic and content development

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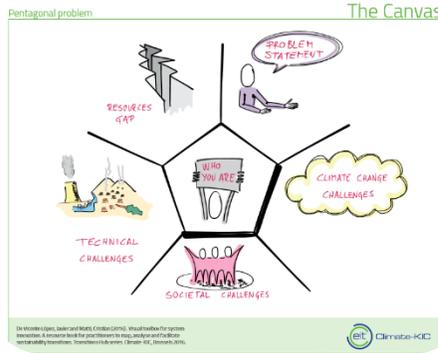
## Co-creation process

Each co-creation process is unique and bring the value of the knowledge and perceptions of the diverse groups of actors participating. Next slides provide examples of actions organised in three stages by considering the goals of **Green Innovation@Schools**. Those actions are usually found in the co-creation process at Climate-KIC

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# Co-creation process

## Example of stages and actions



*Note: These activities can take mostly the form of desk research*

## Stage 1 – Gather Inputs and Analysis

- Choose the team that will discuss the tools and assign tasks to each member
- Consult the eLearning materials and watch the videos
- Consult the Summary Amsterdam
- Download and print the Visual Toolbox
- Study the canvases in detail
- Pick up the canvases that you are going to discuss (at least 3 will be adapted)
- Research about regional examples on circular economy
- Make a small summary of meaningful regional examples on circular economy
- Consult the guides to choose/ write a good case study
- Identify regional particularities related to the canvas elements
- Use Teachers feedback on your activities or talk to them to get inputs on:
  - Their needs regarding teaching tools
  - Characteristics/ interest of their students
- Elaborate a small report with the inputs from the teachers
- Share all the information with the team

# Co-creation process

## Example of stages and actions



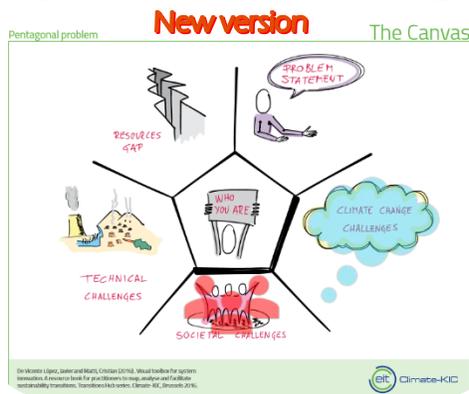
*Note: these activities should combine desk research and co-creation meetings between partners and experts*

## Stage 2 – Discussion and Sketching

- Compare the canvases with the tools used by the partner
- Design and analyse potential scenarios (learning formats) on how the partner pedagogical approach can be combined with any of the canvases
- Discuss what the partner pedagogical approach can add to the tools
- Find possible uses of the canvases under the partners pedagogical approach
- Debate possible uses of the tools in your regional context
- Debate the applicability of the tools in the classroom under multiple formats (individual project, group project, etc.)
- Debate the adequacy of the tools for the intended users according to the characteristics established on the report
- Choose at least 3 three tools
- Define learning goals for the tools
- Choose a case study that will show the partner approach to the regional narratives on circular economy for school context
- Make proposals on how to change/ improve the design or content of the canvases
- Systematise information, process the data and create a “Sketch” of the learning activity

# Co-creation process

## Example of stages and actions



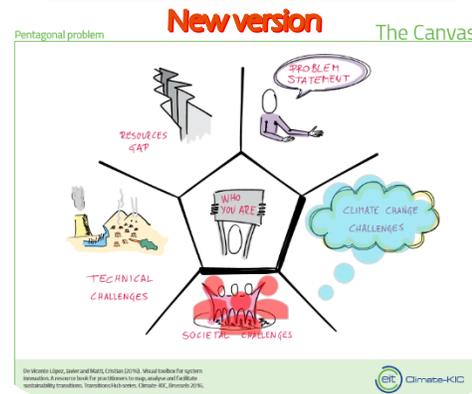
*Note: these activities are focused in elaboration of common draft documents and a final proposal for a Prototype*

## Stage 3 – Edition and prototyping

- Draw the **new canvas** by including the modifications on the canvases agreed during step2
- Compile and transform the data and information about the **case study** (i.e. Write/adapt the case study)
- Let someone outside the main team **review** it to check that it has all the information needed to be fully comprehensible
- Prepare **teaching notes** for the coach/ facilitator of lab-sessions and workshop demonstrators:
  - Assign general roles and responsibilities for the ideal delivery team in the preparation and implementation
  - Design a learning narrative by combining the tools, the case study and partner approach
  - Design a **preliminary agenda**
  - Make a list of issues to pay special attention during testing
  - Define level of difficulty (for students and for the workshops)
  - Define the way to use each tool (individually or in groups, number of members per group, objective, context...)

# Co-creation process

## Prototype configuration



Taboo & memory card games  
**RM@Schools**  
Plant4RM toolkit



### Setting-up the scene

- Presentation of learning goals and expectations
- Define roles and groups
- Getting to know each other

### Adapted tools

New canvas designed in the co-creation process

### Partner tools/ approach

Tools and assignments to be combined with the tools from visual toolbox

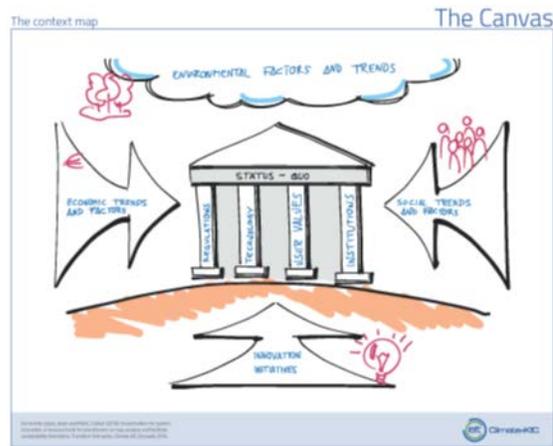
### Discussion, wrap up...

Summary, feedback and exchange of ideas and information about follow-up

Regional narrative (case study)

# Edition & Prototyping

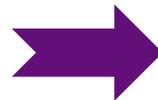
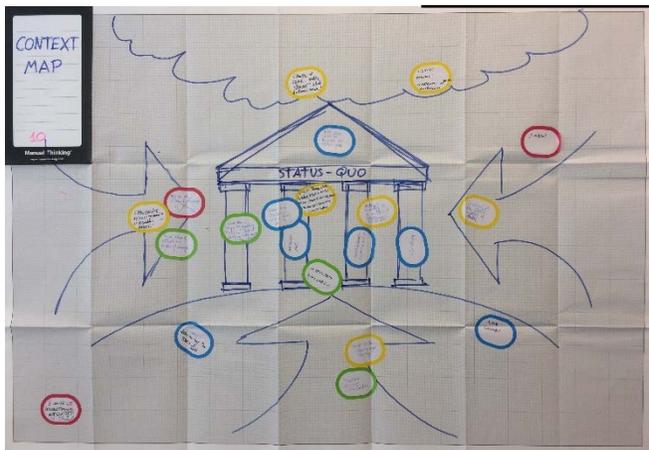
## Example: Context Map



Original canvas



Canvas used for the discussion



### Codified inputs from the canvas

Sections		Text		Categories	
Gnrl			I would not remove anything	5	
innovation	out		more colours	1	visual
			could it be illustrated clearly?	1	visual
			positive change = innovation	1	vocabulary
	out		context determining the status quo	3	text
cloud			change or rather: make clearer: what the clouds mean?	1	explanation
			cloud? Arrows? Grassroots movements -> social	1	explanation
economy			cathegorize arrows: primary or secondary forces?	1	conceptual
			good idea of arrows as forces of change	1	conceptual
			focus on 2 trends instead of 3	1	simplify
social			perhaps one trend instead of 3	1	simplify
	out		symbols	1	vocabulary
temple	roof		add clear space to describe the status quo	1	visual
	column	1	good idea. Temple is something "massive" that has to be "attacked" by new ideas	1	conceptual
	column	2	show the students where they fit in	1	visual
	column	2	Family. Me	1	vocabulary
	column	2	*individual behaviour *available resources *tech-sate of the art *social environment (multifacetes)	1	vocabulary
	column	3	Institutions. Community	1	vocabulary
	column	3	perhaps simplify to 3 pillars? Family/institutions/technology	1	simplify
	column	4	technology	1	vocabulary
	base		"house" "pillars"	1	visual

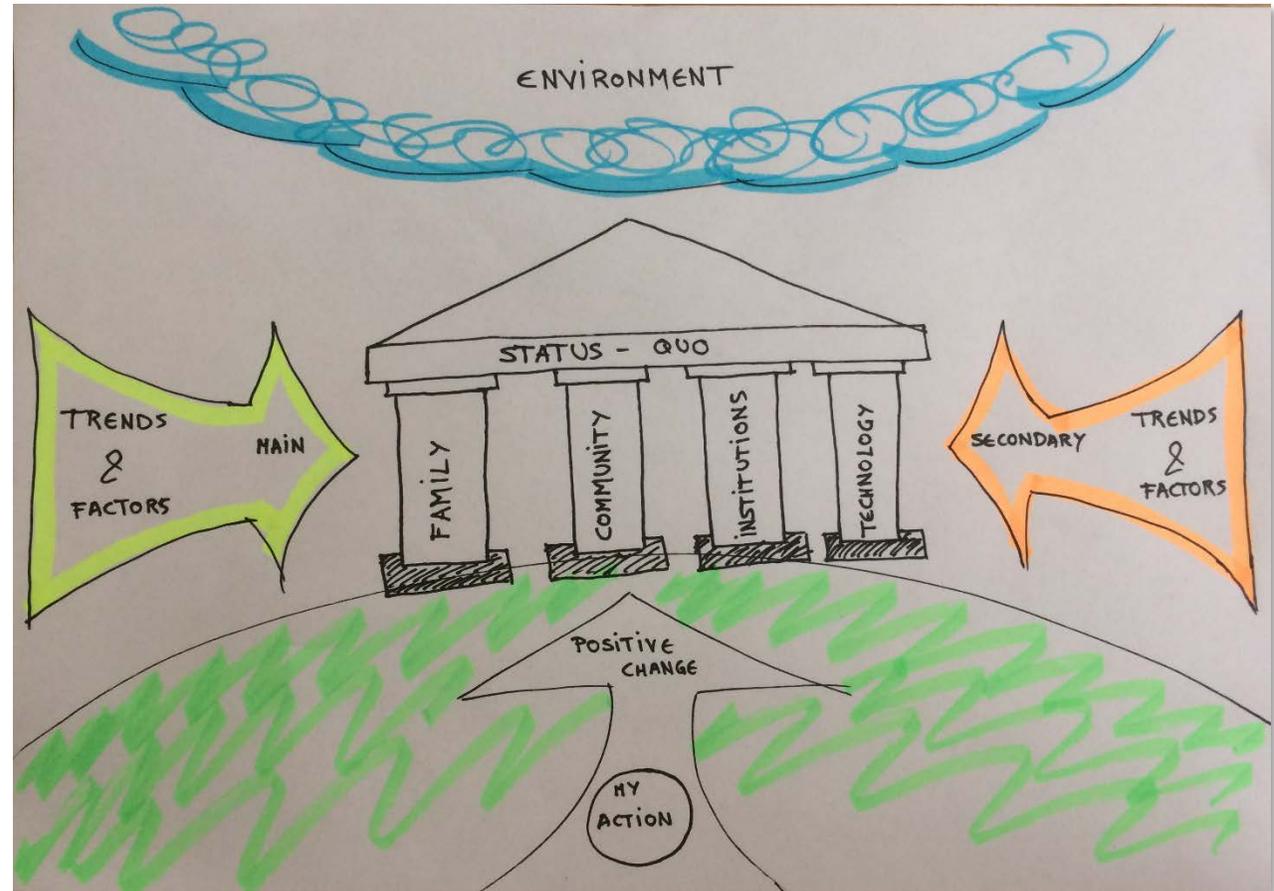
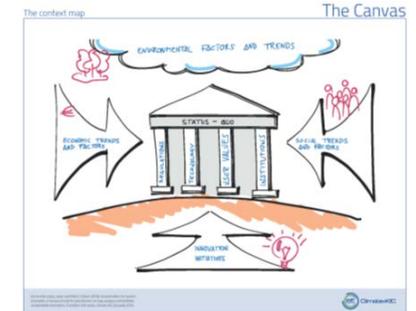
# Edition & Prototyping

## Example: Context Map

Discuss and decide with changes can be implemented  
(in yellow the ones selected for this example)

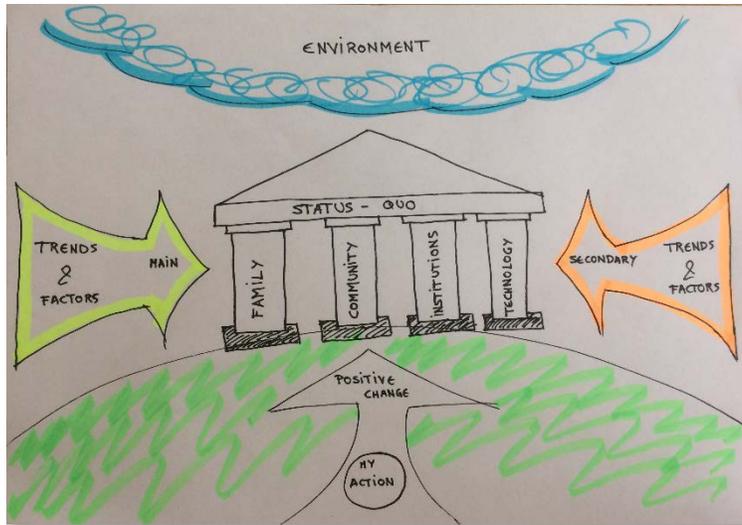
Sections		Text
innovation	out	more colours
		could it be illustrated clearly?
		positive change = innovation
innovation	out	context determining the status quo
cloud		change or rather: make clearer: what the clouds mean?
		cloud? Arrows? Grassroots movements -> social
economy		categorize arrows: primary or secondary forces?
		good idea of arrows as forces of change
		focus on 2 trends instead of 3
social		perhaps one trend instead of 3
	out	symbols
temple	roof	add clear space to describe the status quo
	column 2	show the students where they fit in
	column 2	Family. Me
	column 2	*individual behaviour *available resources *tech-state of the art *social environment (multifaceted)
	column 3	Institutions. Community
	column 3	perhaps simplify to 3 pillars? Family/institutions/technology
	column 4	technology
base		"house" "pillars"

Design the new canvas



# Edition & Prototyping

## Example: Context Map



### Practical application

This canvas can be used to discuss in the classroom an environmental relate problem such as waste management

### Sections explanation:

**Environment:** Start by identifying the environmental elements related to your actions or to the status quo. You can also identify how your actions may impact the environment either negatively or positively.

**Trends and factors:** Identify the elements within the status quo more likely to have an influence on the problem addressed. Those can be economic (prices, taxes...), cultural, social (social perception of technologies, lifestyle trends, consumer habits, etc.) Decide which are the main ones and which are secondary.

**Positive change / My action:** Individually, identify innovative actions and experiments with the potential for making a difference. Use one post-it for each initiative and put them on the canvas.

**Status Quo:** That is the current social and economic system, dominated by mainstream technologies, established institutions, rules and regulations, powerful players, etc. Take into consideration which elements are more stable and which ones are more likely to change overtime

- **Family:** Family is the main reference for children. Values, behaviours and boundaries are learn and fight against within the family. Identify the aspects that can help or difficult your actions.
- **Community:** The range of social values provide the basis for what is right and what is not, shaping people behaviour. These values encompass, among others, cultural understanding of different technologies, and even the social ethical framework, which can be determining for your innovation to be adopted.
- **Institutions:** The current and relevant players in your system are organised in a way that affects how the system as a whole works. Therefore, try to identify those institutions, big players, as well as any explicit or implicit cluster characterising the system and potentially affecting your actions.
- **Technology:** Technology accounts for those factors and events that characterise the technological landscape in your system or status quo. Think of the trends and innovations that can pose new opportunities or facilitate your actions and which could represent a barrier.

# Co-creation process

*Prototype examples*



## Combination 1

*2 adapted tools  
1 tool from partner  
Case study*

## Combination 2

*3 adapted tools  
Case study*

## Combination 3

<b>Group 1</b>	<b>Group 2</b>
<i>1 Adapted tool xyz</i>	<i>1 Adapted tool xyz</i>
<i>1 Partner tool xyz</i>	<i>1 Partner tool xyz</i>
<i>Case Study</i>	<i>Case Study</i>

## Combination 4

?

# Prototype example

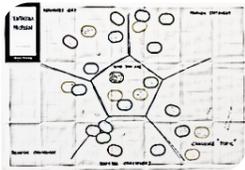
*Adaptation and selection of tools from the System Innovation Toolbox*

## Case study



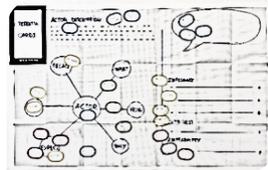
The *case study* provides the basic information and context of a real case from which the challenge will be developed.

### Pentagonal problem



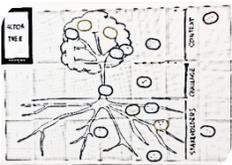
Helps stating the challenge and who the group will decide to act as.

### Credential cards



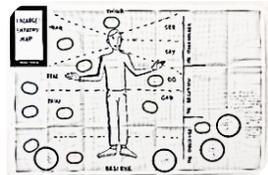
Helps exploring the attitude of one specific actor/stakeholder.

### Actor tree



Helps contextualize the challenge and map out the main stakeholders around it.

### Empathy map



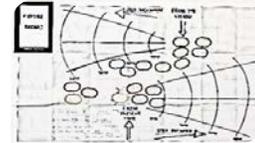
Helps exploring the attitude of one specific actor.

### Context map



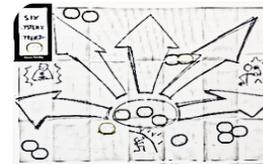
A systemic perspective on the challenge. The *multi level perspective* may not need to be explained.

### Future radars



A visioning and backcasting exercise around a specific challenge.

### Six systemic strengths



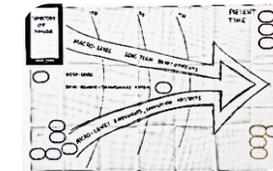
Once the group has a gained a clear idea of the challenge, SSS help identify actions.

### Flourishing multilevel



Helps describe the system around the challenge in a clear multilevel perspective.

### Trajectories of change



Provides a way to trace how a system has evolved over time in a multilevel perspective.

### Visual story



A funny and creative way to envision the desired future related to the challenge.

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# Combining tools

The **Visual toolbox** for system innovation is a set of visual tools developed for practitioners to map, analyse and facilitate sustainability transition projects. These tools are:

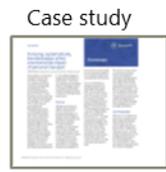
- **group-work oriented.** They are meaningful when used within a group
- specifically developed for **interdisciplinary** groups
- **empirical**, meaning that the outcomes are based on the direct knowledge brought by users
- **iterable**, as looping them will help refining results
- **project-oriented**, they best apply to real-life cases (ongoing projects, start-up ideas...)
- useful to develop a clear **narrative** about the project/challenge being addressed

Tools can be also seen as steps of a design-thinking process. They connect to each other, with outcomes from one feeding the other. According to the type of audience and to the training objectives, therefore, they can be **combined** in different manners.

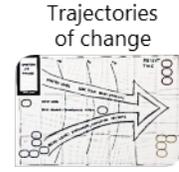
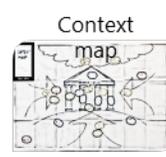
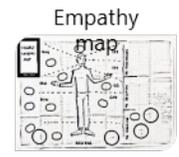
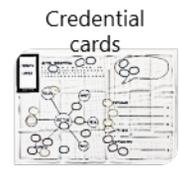
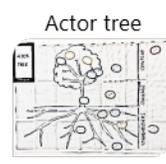
Moreover, tools can be also **adapted** and **simplified** where needed. Lexical **adaptation** was also underpinned as necessary when the toolbox was first presented at the first project workshop in Amsterdam.

# Combining tools

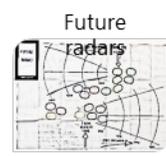
*Stating the challenge*



*Insight*



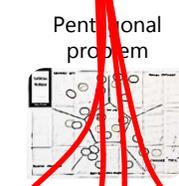
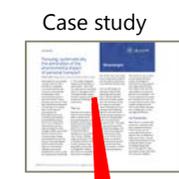
*Visioning*



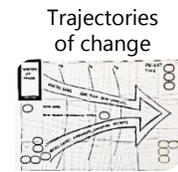
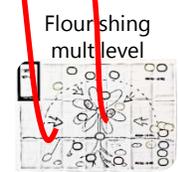
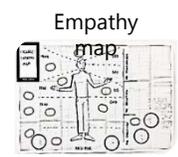
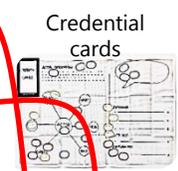
*Managing*



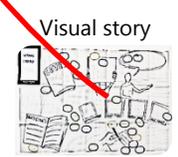
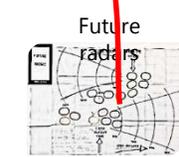
*Stating the challenge*



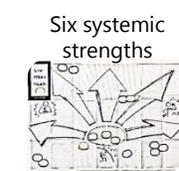
*Insight*



*Visioning*



*Managing*



# Combining tools

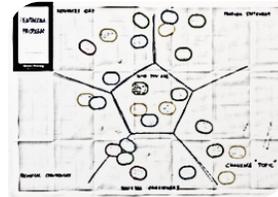
## An example

### Case study



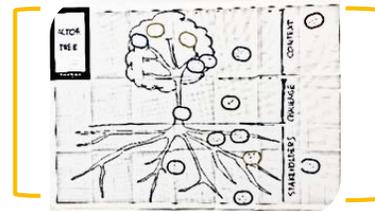
The *case study* will provide basic information about an experience in the region related to circular economy. A real case of a pilot initiative, start-up, or any other meaningful project upon which a group of students will be able to build a specific challenge

### Pentagonal problem



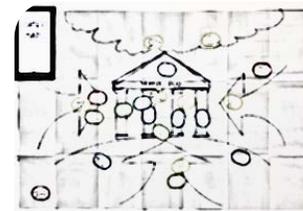
The *pentagonal problem* will help defining the challenge and the "point of view" (i.e. the role) that the group will decide to take. Our challenge is... We are...

### Actor tree



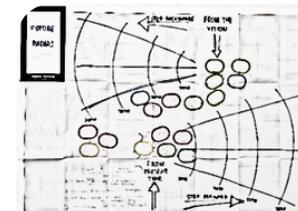
Optional: The *actor tree* can help explore the actors/stakeholders around the challenge. As a starting point stakeholders are grouped into categories and subcategories according to their features

### Context map



The *context map* will help zooming out on the bigger picture around the challenge, including socio – technical factors, economic trends and niche initiatives. Students will acquire a systemic vision on their challenge.

### Future radars



*Future radars* is a tool that will help planning the actions ahead. A Visioning and backcasting exercise to envision a desired future for the challenge and start building a project strategy.

# Prototype example

*Pedagogical approach*



## Scientific

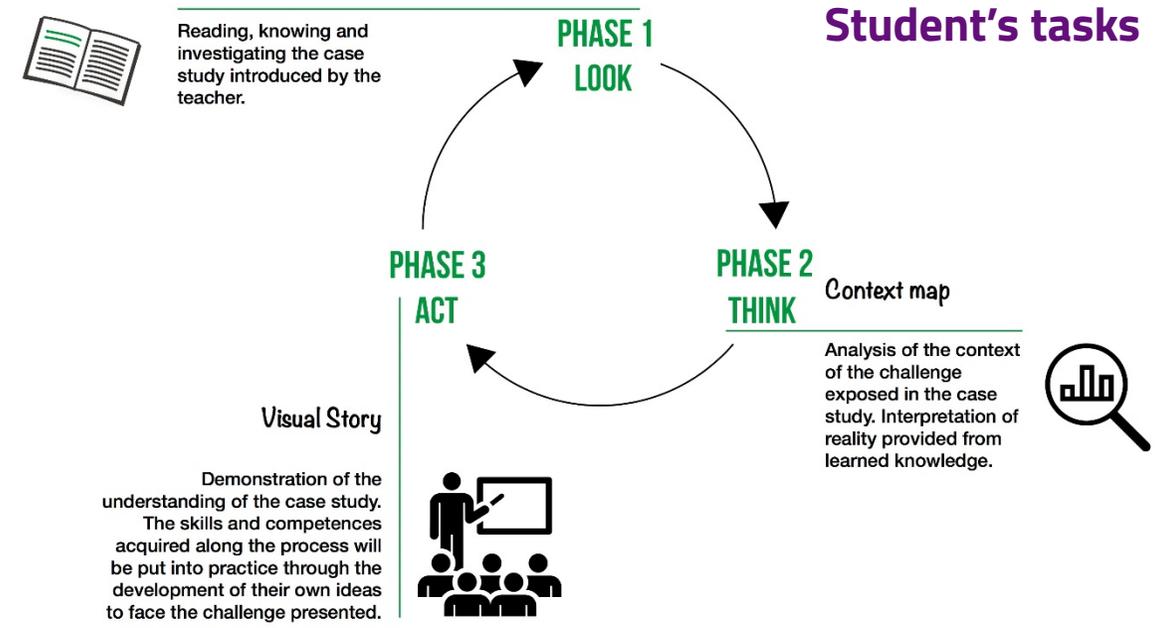
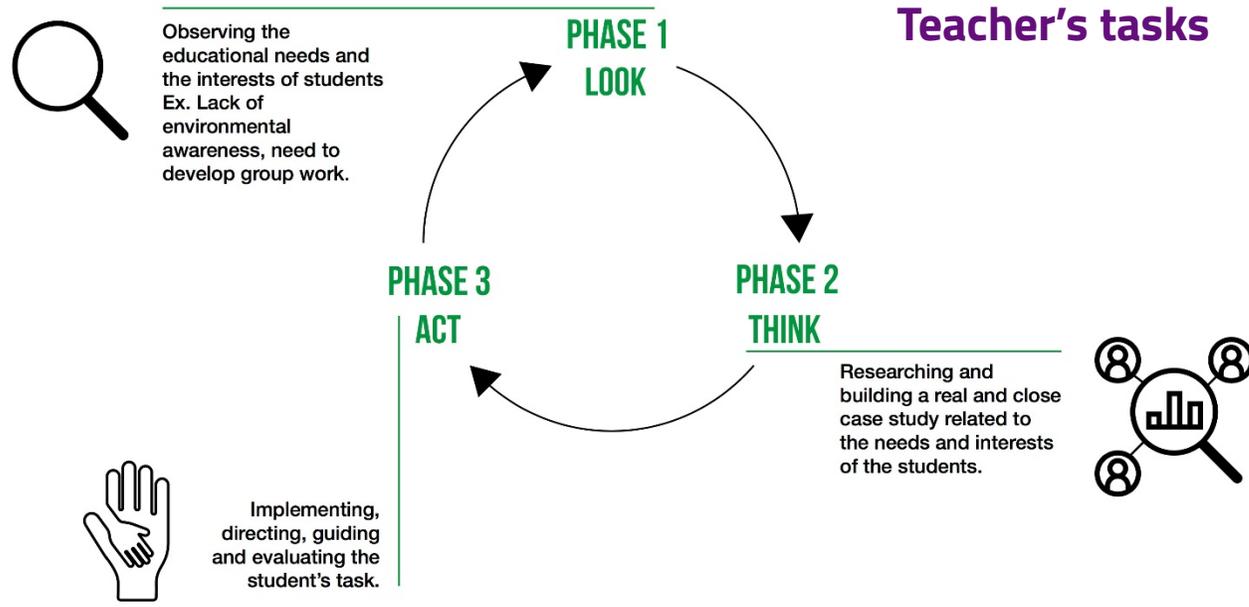
- Adapt Visual Toolbox methodologies to the educational context.
- Conduct a pilot workshop applying the methodologies of the Climate-Kic Transition Hub with students between 15 and 18 years old.



## Educational

- To introduce circular economy to the students.
- To introduce systemic thinking to students.
- To improve student knowledge management.
- To develop environmental awareness of the students.
- To practice on creative problem solving.
- To develop social competences of students.
- To improve student teamwork.

# Teacher's and Student tasks



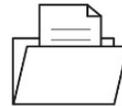
# Session lab Design

## Timing of the session



## Resources and teaching materials

The teacher creates materials to present the case study to the students. In our case these materials are:



- 1- Introduction to circular economy + Explanatory video
- 2- Case study
- 3- News related to the case study



Materials will be available for the students before the practice to know and to investigate the case study.



During the session, the resources and material of the case study will be available for the students during the realization of the exercises.

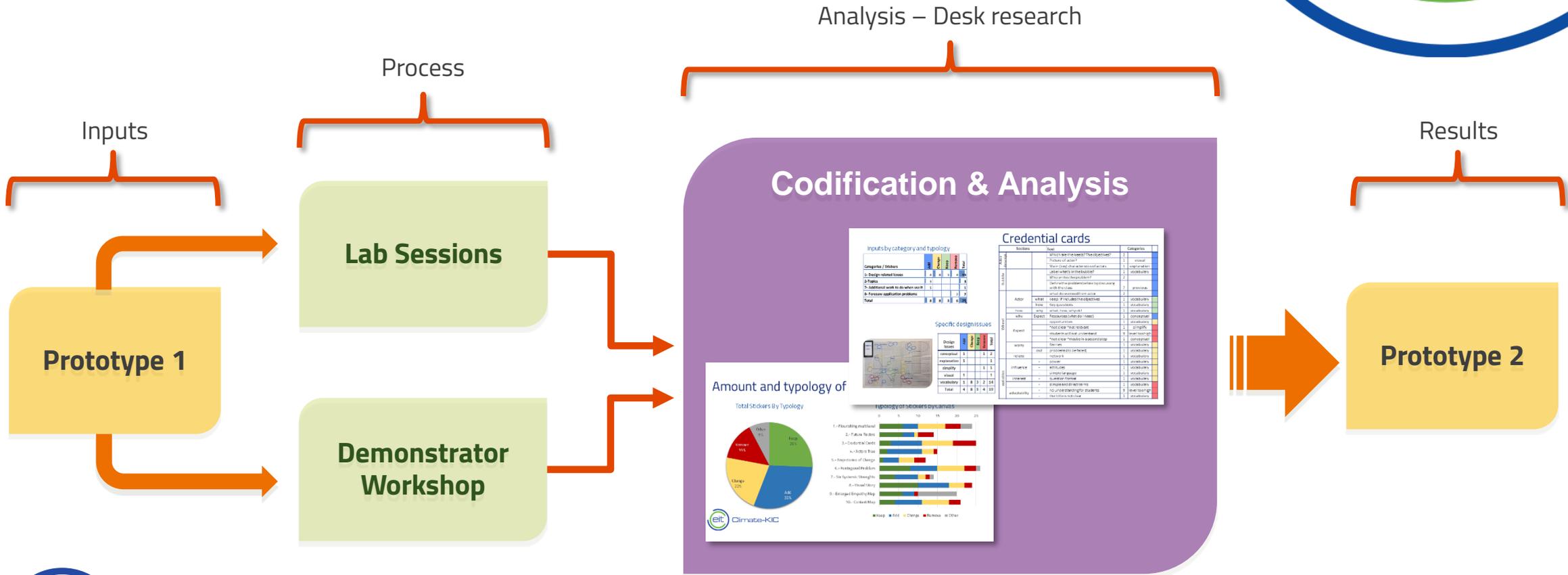
# Task 3

*Labs sessions and  
Demonstration workshops*

## Outline

1. *Task 3 process*
2. *Objectives, resources and planning of the activities*
3. *Workshop design*
4. *Lab Session*
5. *Workshop demonstrator*
6. *After workshop*
7. *Feedback*

# Task 3 process



# Objectives, resources and planning of the activities



*Objectives:*  
to foster the participatory  
process of capacity  
development



## Resources

### 1. Prototype 1:

- Case study
- Adapted tools+partner tools/approach

### 2. Guidelines Green Innovation@Schools

### 3. Examples of past workshops on TH library



## Work to do before the workshop Guidelines - Checklist

### Design

- *Contact of participants, how do you proceed?*
- *How the event is explained?*
- *Selection process*
- *Save the date email*
- *Pre-workshop task: Ask them to do the pentagonal problem -> how, what do you provide them (just the template?)*
- *Order materials (stickers, pens, markers, sheet of papers)*
- *Contact speaker and facilitator to run the workshop*
- *Prepare a schedule*
- *Book a room*
- *Organize the disposition of the room*



# Workshop design

## Guidelines - Check list



### 1 Intro

- Content of the introduction
- Introduction of each participant
- Presentation of their pentagonal problem
- *Collect information regarding problem definition*
- Facilitators to help participants to define the problem

### 2 Assignments

- *Need of stickers, papers, markers*
- Establish a status quo
- Time to brainstorm
- Facilitator to help each team during the process
- *Collect information regarding the elements of participants' discussions*

### 3 Expert lecture/Showcase

- *PowerPoint support*
- Local examples
- Show other study case to illustrate how their goals could be achieved

### 4 Method

- *PowerPoint support*
- Explanation of the approach
- Example of methodology application

### 5 Feedback

- *Get and use a review form*
- Define the next steps
- One facilitator
- *Collect the main conclusions of each team and what they plan to do next*

---

# Lab Session

---

## Participants

- Partner experts
  - Coaches/Facilitators
  - Teachers/Educators
- 

## Materials

- Prototype materials:
    - ✓ Adapted tools Visual toolbox
    - ✓ Case study related materials
    - ✓ Tools and materials from partner approach
- 



8 Working groups  
**Climate-KIC**  
*Valencia – Catalyst 2014*

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## Suggestions for Lab Session

Lab Sessions can be used to **test 1 or 2 Prototypes** as part of the same regional narrative (i.e. Case Study on circular economy). This can be organised in two interacting groups.

Testing 2 Prototypes can be used to test different combination of tools and get better feedback on the overall approach. However, you need to have two facilitators and a clear learning narrative to allow the interaction between groups.

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# Workshop demonstrator

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## Participants

- Partner experts
  - Coaches/Facilitators
  - Teachers/Educators
  - Students and/or civil society (family)
- 

## Materials

- Prototype materials:
    - ✓ Adapted tools Visual toolbox
    - ✓ Case study related materials
    - ✓ Tools and materials from partner approach
- 



Same tool & different problems (Suppliers vs Users)

**Climate-KIC & EIT Raw Materials**  
*Leoben, Austria 2016*

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## Suggestions for workshop demonstrator

Working in groups with different set-up can facilitate the dynamic of the workshop. In practice, the common topic (i.e. Circular Economy) can be addressed through different problems. Encouraging groups to work on their own stories about the future can be a possible approach.

The combination of tools can help to test also different configurations. A common starting point (e.g. adapted Visual Story, Context Map) can be combined with different tools from partner approach. A follow-up activity related to dissemination of results could be agreed with the teacher based on workshop results.

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# After workshop

## Guidelines - Checklist



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Deliverables:  
Prototype 2

---



# 1

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## Reporting & Prototype 2

- *Assign tasks to each team member*
  - *Gather notes*
  - *Redaction of the report*
    - *Gather information, transcribe the data collected on the workshop.*
    - *Analyse the information and creation of infographics*
    - *Adapt and modify the visual tools and the overall workshop design (Prototype 2)*
  - *Power point presentation*
  - *Creation of a time line*
- 

# 2

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## Follow up

- *Follow up*
  - *Organize the presentation (webinar)*
  - *Gathering feedbacks*
  - *Agreed on next steps*
-

---

# Feedback

## *Review form example*

### General Judgement

- Concept elements OK?  
*If not, why not?*
- Usability to teach at school?
- Visuals understandable?
- Amount of information?
- Any other general comments?



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*Note: these questions can be taken as suggestions for the Impact framework*

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### Guiding Questions For The Conceptual Part

- Do consider the explanation of the Tool XYZ sufficient for teaching at school? If not, what would you need?
- Do you feel the explanation of theory is adequate? If not what should be changed?
- Are the visual elements OK? In case not, which one, why?

### Guiding Questions Per Assignment

- Is the description of what to do (steps) clear? If not, what is not clear to you?
- It is clear to you how to relate assignment results to your learning goals, when discussing results with participants (teachers/ students)? If not, what would you need extra? Any suggestions for practical insights that could be added?
- Are the visual elements OK?
- Missing things for the goals choosing an assignment for the right occasion, and teaching goals? If so, what?
- Any other comments? or suggestions?

# Briefing document

## *Preparing educational case studies*

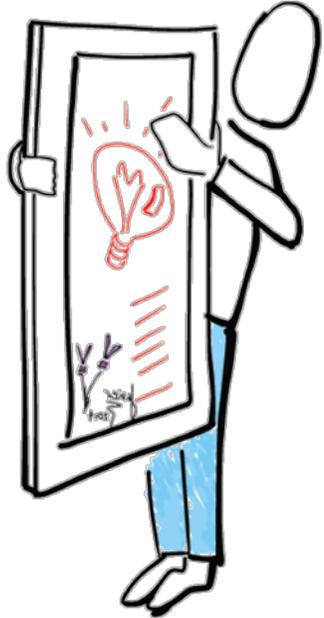
*Based on material developed by*

**Anne Bartens**  
Education Manager  
Professional Education – Climate-KIC  
February 2015

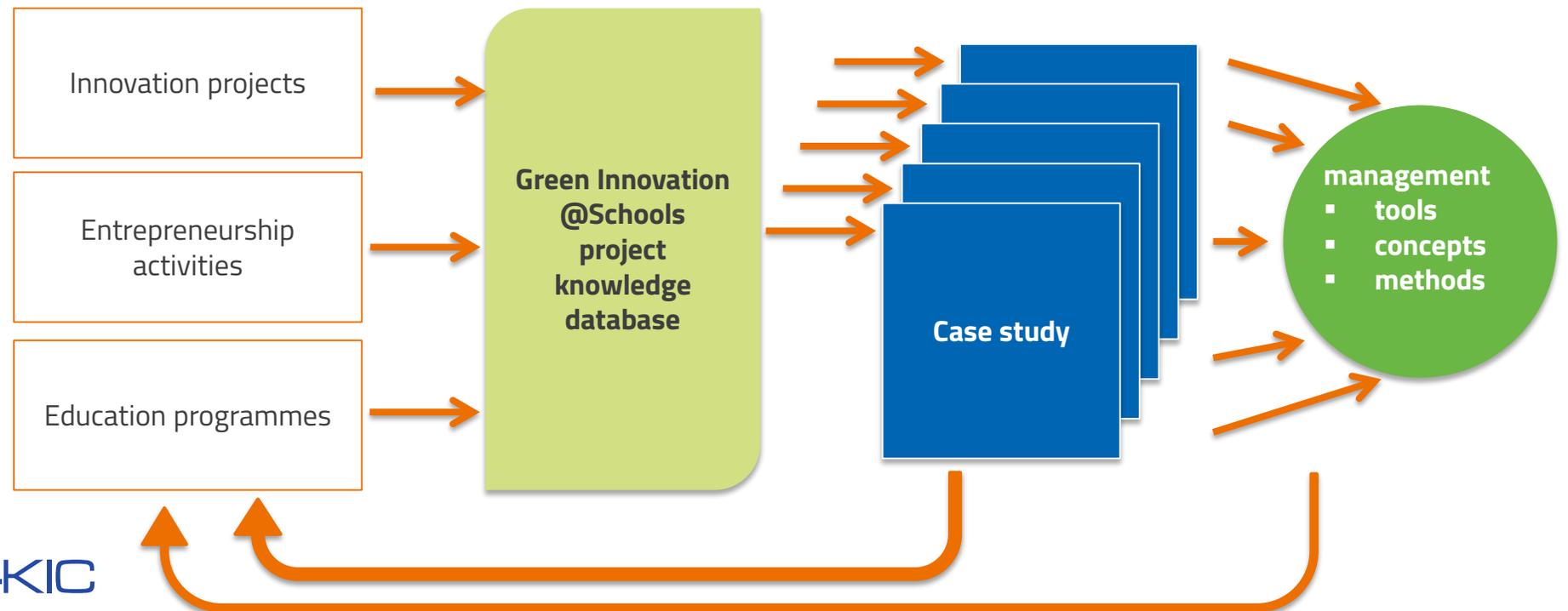
### Outline

1. *Background*
2. *A case study*
3. *Elements of a Case Study*
4. *Case study. Chek list*
5. *Teaching Case / Impact Case*
6. *Development Process*
7. *A: How to identify promising case studies*
  - *Questions to answer before writing*
8. *B: Data collection*
9. *Writing the Case*

# Background



- A critical success factor for the future Green Innovation@Schools project will be the development and use of own (unique) case studies and knowledge products
- We need to systematically collect the knowledge created in the different KICs activities and identify the most promising cases that we then can turn into case studies and later into applied tools, methods and concepts



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# A case study



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*"Case studies bridge the gap between theory and practice and between the academy and the workplace"*

*(Barkley, Cross and Major, 2005)*

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## *A Case Study is ...*

- a story and describes factual series of actions that occurred in the past
- a teaching method that allows the reader to
  - analyse the situation and taken actions
  - make a decision or recommendation
- a method that requires students to quickly make sense of a complex situation and to come up with a reasonable solution

## *Good case studies...*

- "are the vehicle by which a chunk of reality is brought into the classroom to be worked over by the class and the instructor. A good case keeps the class discussion grounded upon some of the stubborn facts that must be faced in real life situations."  
(Paul Lawrence, quoted by Christensen, 1981)
- "give students practice identifying the parameters of a problem, recognizing and articulating positions, evaluating courses of action, and arguing different points of view"  
(Carnegy Mellon, 2011)
- "break down the complexity of business situations into prominent and teachable learnings"  
(T. Grandon Gill, 2011)

# Elements of a Case Study



Includes **beginning, middle and ending**. Involves narrative description. Engages the reader on both intellectual and emotional level

Based on the application of **theories and analytical perspectives** to past situations



**Goal** is to encourage critical thinking. Analysis of situation and evaluation of actions



Based on **facts**. Supported by documentation and non-fictional



**Reader** as protagonist – subject to informed decision making

# Case study

## Check list



### *Effective teaching case studies:*

- tell a “real” and engaging story
- raise a thought-provoking issue
- have elements of conflict
- promote empathy with the central characters
- lack an obvious or clear-cut right answer
- encourage students to think and take a position
- portray actors in moments of decision
- provide plenty of data about character, location, context, actions
- are relatively concise

(Davis, 1993)

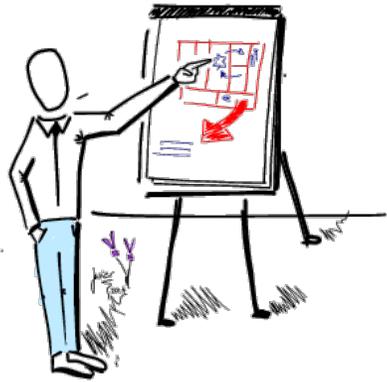
### *Learning Outcomes*

- identification of the problem or challenge
- understanding and interpreting data
- analysing information
- recognising assumptions and inferences
- thinking analytically and critically
- exercising judgement
- taking and defending decisions
- understanding interpersonal relationships
- communicating ideas and opinions



Valuable tool for educational activities

# Teaching Case / Impact Case



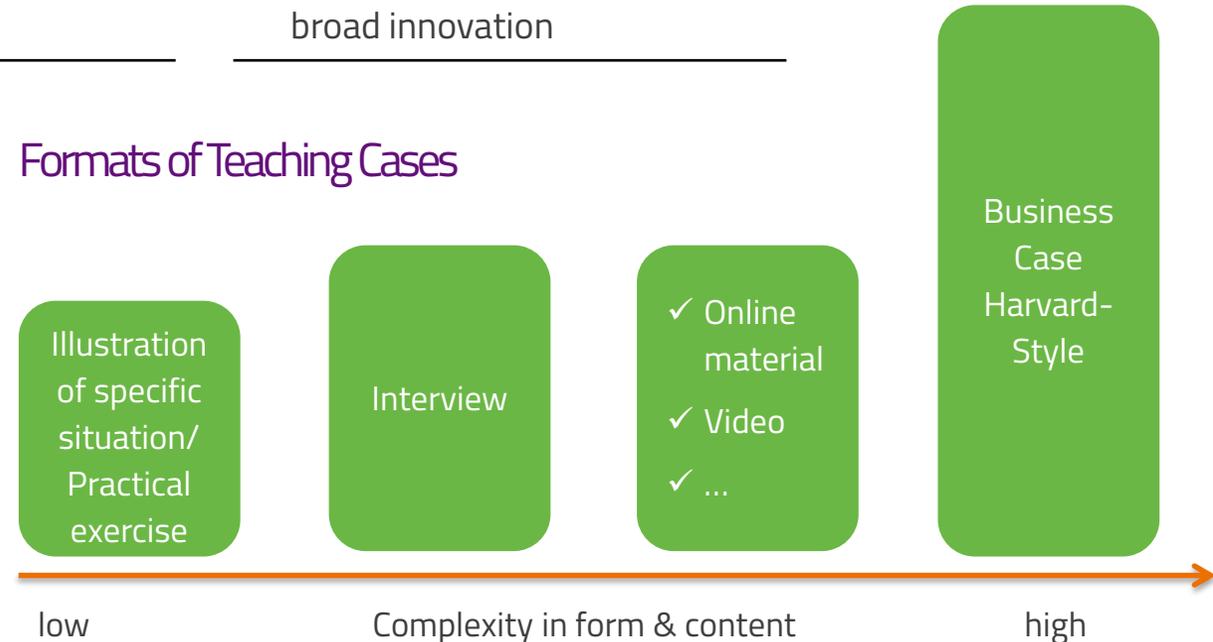
## Teaching Case:

- Used as teaching material especially for schools
- Describes interesting situation suitable for learning reflection & decision making

## Impact Case:

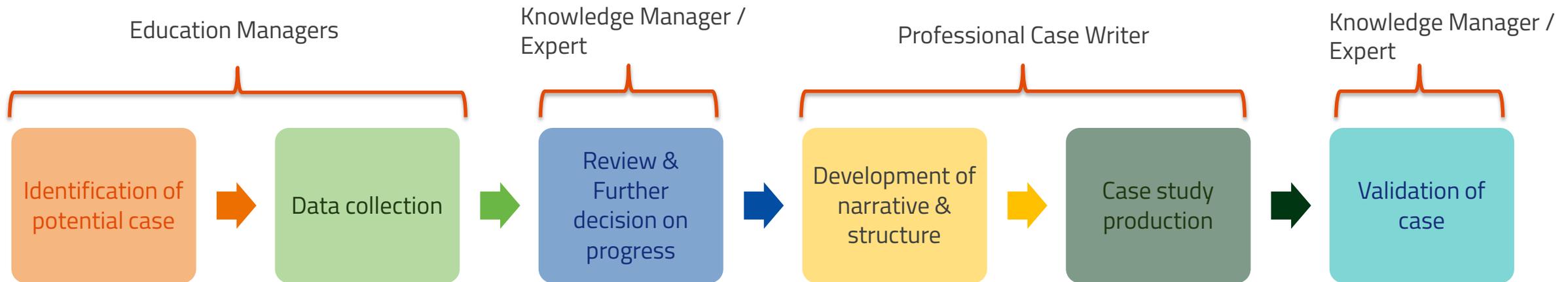
- Used to describe & showcase impact from specific project or action
- Shows how the selected project/ action contribute to broad innovation

## Formats of Teaching Cases

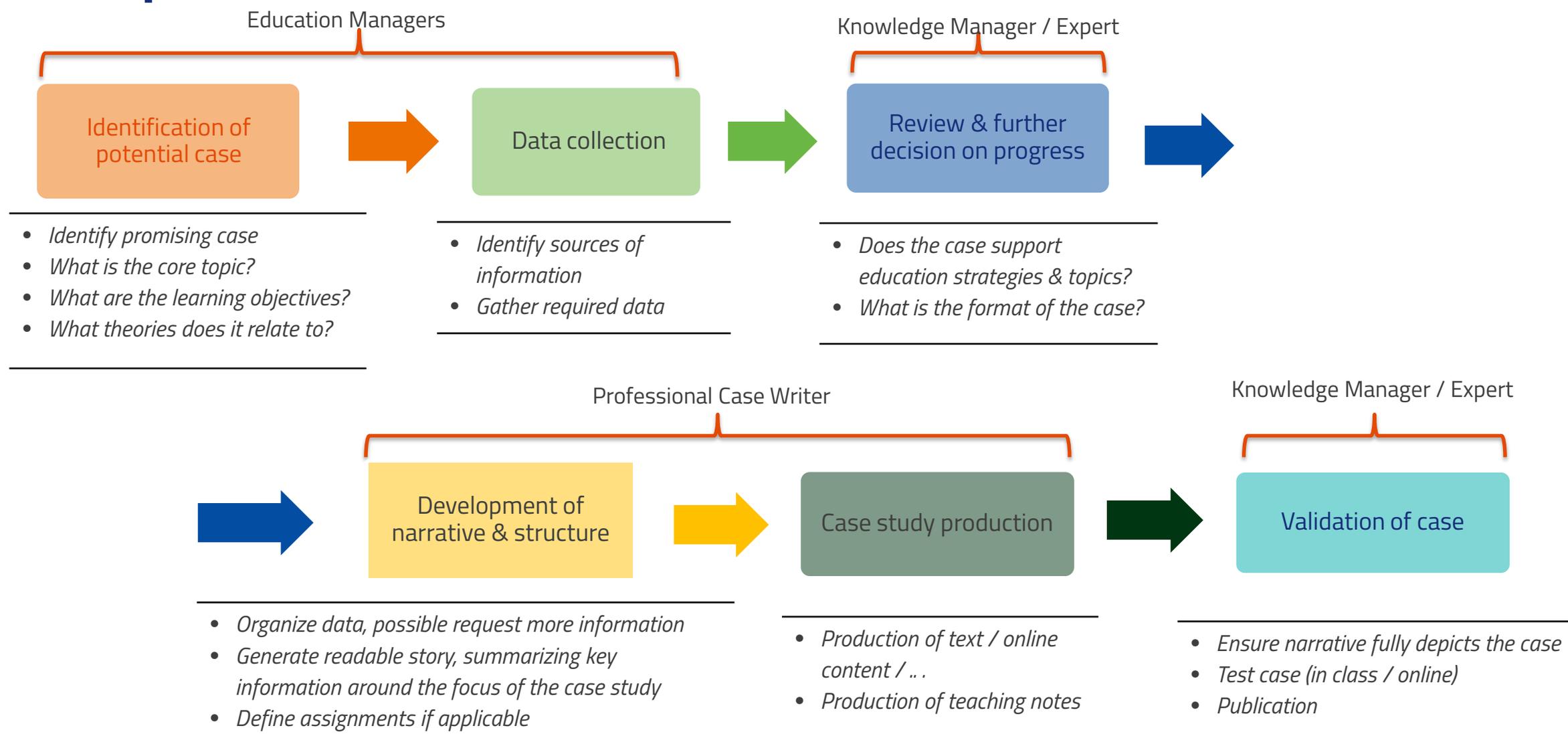


# Development Process

*Standard procedure followed in Climate-KIC*



# Development Process



# A: How to identify promising case studies



- *An educational case study is more than a description of a success story. It needs to teach a lesson, promote further thinking*
- *Often “failures” are used as the basis for case studies.*



*Does the case revolve around a specific problem?*



*Does it thematically match the project goals?*



*Is the issue interesting and engaging?*



*Do I have enough documentation to support the case?*



*What is the planned learning outcome?*

# Questions to answer before writing



*Who will my audience be? How difficult should my case be?*



*How does the case fit into my teaching? What are my teaching objectives? What key discussion questions do I want to bring into the classroom?*



*Does the case include controversy, contrast, conflict, dilemma, or other dramatic elements?*



*What type of case do I want to write? A field case, a "library" case, or an "armchair" case? A full-length case, a mini-case, a case series, or a multimedia case?*



*What is the decision focus of my case? Who will be my protagonist? Why is his or her decision urgent?*



*What are the standard components of a case? How shall I open the case? What sections shall I create thereafter? How shall I close the case?*



*In what style shall I write a case? Are there any writing rules I should know? Any tips for editing the draft?*



*What data do I need to complete a case? Do I need interviews, and if so, with whom, and how many? How can I get an organization to cooperate on allowing interviews?*

## B: Data collection



*Data needs to present a holistic view of the situation and decisions at all times*



A case is a factual description of a real situation



In order to be the basis for discussion, it needs to contain sufficient information



### *Sources:*

- Background information, such as market analysis, company history...
- Interviews
- Meetings / Minutes
- ...

# Writing the Case



Step

1

---

Identify and establish an issue/problem which can be used to teach a concept or theory.

---

Step

2

The opening paragraph of the case should typically contain the following information:

- **WHOSE** role is the reader / student to assume (eg. citizen, corporation, government..)?
- **WHO** is the key decision maker?
- **WHAT** is the nature of the issue/problem?
- **WHEN** did the case take place? Specify the date line in this paragraph.
- **WHERE** did the case take place; what organization?
- **WHY** did the issue/problem arise?

Step

3

Establish teaching objective(s) and revise the opening paragraph as necessary:

- Specify the **purpose** of writing the case.
- Check if the **opening paragraph** matches the purpose.
- Check if the **case** is appropriate for the **course** for which it is intended.
- Check if the **case** is appropriate for teaching the **relevant concepts/theories**.

Step

4

Structure the case and decide on subheadings

---

# References

## & further information

- *Handmade pictures by Javier de Vicente Lopez (slides 6,9,11,15,20,21,22,23,26,27,28,30,31,34,37,40,41,42 and 43)*

See more here <http://factoryforchange.com/es/sobre-nosotros/>

### General information on case studies

- <http://www.thecasecentre.org/educators>
- [http://www.rsm.nl/fileadmin/Images\\_NEW/CDC/How\\_to\\_Write\\_a\\_Good\\_Teaching\\_Case.pdf](http://www.rsm.nl/fileadmin/Images_NEW/CDC/How_to_Write_a_Good_Teaching_Case.pdf)
- [http://www.emeraldgrouppublishing.com/products/new/pdf/quick\\_ref.pdf](http://www.emeraldgrouppublishing.com/products/new/pdf/quick_ref.pdf)
- <http://globalens.com/DocFiles/PDF/cases/Preview/GL1429140P.pdf>
- [http://www3.nd.edu/~sbyrnes1/pdf/Writing\\_Resources/Writing\\_Case\\_Study.pdf](http://www3.nd.edu/~sbyrnes1/pdf/Writing_Resources/Writing_Case_Study.pdf)

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