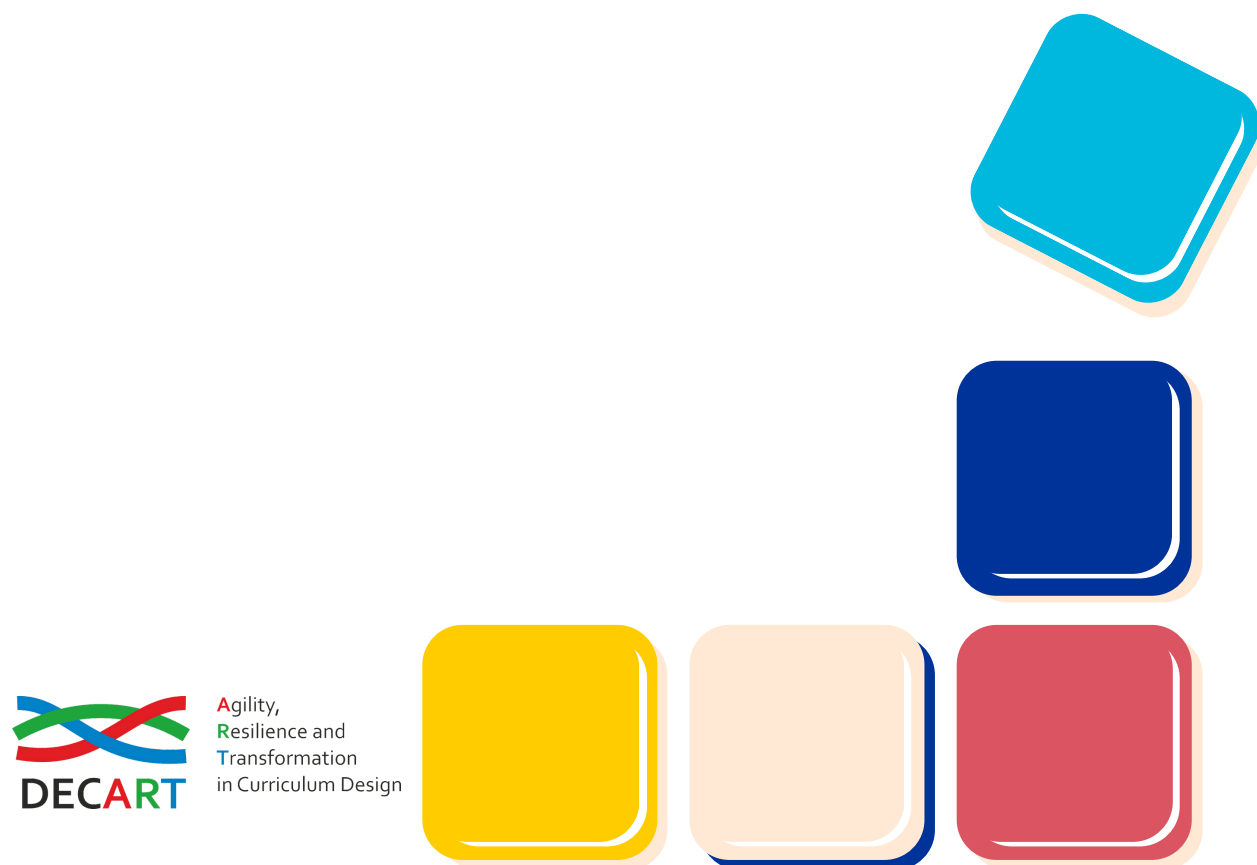


SUCRE



# User Manual

Curriculum resilience



Agility,  
Resilience and  
Transformation  
in Curriculum Design

# CONTEXT

This serious game was developed in the frame of a European project called DECART: Designing higher Education, Curricula for Agility, Resilience & Transformation.

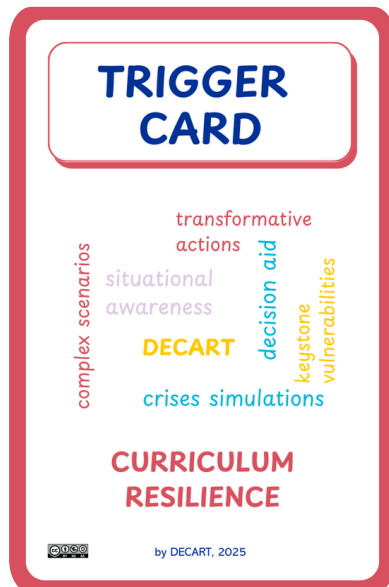
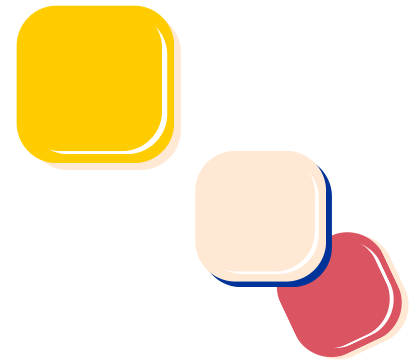
DECART is a research and innovation project that involves an international cooperation partnership. Partner institutions are from France (IMT Atlantique), Germany (RWTH Aachen University), Iceland (Reykjavik University), Indonesia (Del Institute of Technology), Lithuania (Vilnius University) and South Africa (UKZN). The project aims to facilitate the sharing of innovative curricula and their volatile, uncertain, complex and ambiguous (VUCA) properties, develop curriculum cooperation modes that are resilient, strengthen leadership capabilities for driving curriculum transformation, and disseminate innovative curricula structures, curriculum design methods and leadership tools.

As part of this project, a serious game, called SUCRE, for improving the resilience of a curricula in higher education institutions was developed. In the following, we use the term university for all types of higher education institutions. There are several definitions of curriculum, and here we refer to curriculum in higher education generally as “guidance on what to teach and the educational process”.

SUCRE is a cooperative game where participants try to collectively apprehend and deal with different trigger events affecting their higher Education Institution curriculum in order to improve the resilience of the curriculum. But SUCRE is more than a serious game and can be considered as a decision tool that reveals a process for improving the resilience of curricula in real case situations. The game can also be played online on MIRO\*

\*Information contact: [roger.waldeck@imt-atlantique.fr](mailto:roger.waldeck@imt-atlantique.fr)

# Game Content



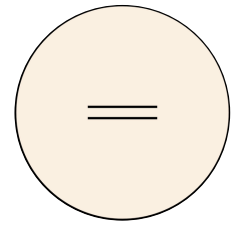
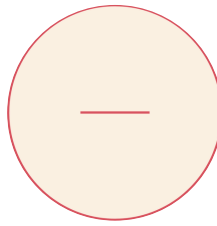
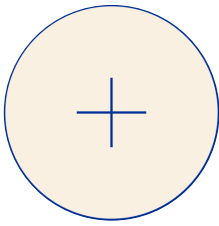
Trigger cards represent challenging circumstances / events that higher education institutions may face. There are 39 trigger cards with 3 categories: "competition and economy", "Environment", "technology" and Technology. You can create your own trigger card

Impact Cards represent potential consequences implied by a trigger event. There are 44 impact cards with 4 categories: "Curriculum", "University conditions", "Staff" "Students". You can create your own impact card.



Action cards are used for building solutions solving problems raised by some trigger cards. There are 43 action cards with 4 categories: "Teaching and learning", "Curriculum structure", "Curriculum context", "Quality culture". You can create your own action card.

Tokens to be placed on impact cards representing positive, negative or non quantifiable impact of the trigger on the impact



**CURRICULUM Id. CANVAS**

• UNIVERSITY CHARACTERISTICS

Social and environmental responsibility is part of your reputation: Yes / No

Campus buildings concerned have high environmental performance: All / None / Some

Staff recruitment for curriculum: the university can easily find teachers (professional or institutional): Yes / No

% of civil servants: High / Low

Type of university: Public / Private sector

The board of directors can set staff recruitment quotas at its discretion: Yes / No

Funding from public sector: High / Low

Funding from private sector: High / Low

Funding from student fees: High / Low

Funding from research: High / Low

Investment: the university can easily mobilize funds for investment: Yes / No

• TYPE OF CURRICULUM

Degree of specialization: Towards employability / More fundamental scientific teaching

Dependence on the private sector for student placement: High / low / %

Major sectors of recruitment: Agriculture, Energy, Manufacturing, Commerce & Finance, Construction, Education & Research, Public service, Transport, None

Diversity of scientific fields: Highly specialized / Requiring more than one complementary field

Admission conditions and selectivity: High (quality is fundamental) / Low (quantity is favored)

Dependency of curriculum on international partnership: Yes / No

Language of instructions: National language / English / Hybrid

Adaptability : the curriculum content can easily be changed in short term (no legal constraints): Yes / No

Recruitment of students is highly dependent on reputation and accreditations: Yes / No

Trend in number of students: Increasing / Decreasing / Stable

Curriculum CANVAS specifies different dimensions describing a curriculum of a university. A team can generate its own curriculum characteristics card using the "Curriculum" canvas.

01

**CURRICULUM Id.**

**Global Business and Management, GBM Program**

**(generated by ChatGPT)**

• UNIVERSITY CHARACTERISTICS

Social and environmental responsibility is part of reputation: Yes

Campus buildings concerned have high environmental performance: Some

Staff recruitment: the university can easily find teachers (professional or institutional): No

% of civil servants: Low

Type of university: Private sector

The board of directors can set staff recruitment quotas at its discretion: Yes

Funding from public sector: Low

Funding from private sector: High

Funding from student fees: High

Funding from research: Low

Investment: the university can easily mobilize funds for investment: Yes

• TYPE OF CURRICULUM

Degree of specialization: Oriented towards employability

Dependence on the private sector for student placement: High (approx. 80%)

Major sectors of recruitment: Commerce and Finance

Diversity of scientific fields: Highly specialized in one field (business studies)

Admission conditions and selectivity: High (quality of student is fundamental)

Dependency on international partnerships: A plus

Language of instruction: English

The curriculum content can easily be changed in short term (no legal constraints): Yes

Recruitment of students is highly dependent on reputation and accreditations: Yes

Trend in number of students: Increasing

A Curriculum card is an instantiation of the Curriculum canvas. It describes a curriculum of a university across the dimensions of the canvas. They are 9 Id. cards

# RECAP' CARD

## SET UP

Teams of 1 to 6 players acting cooperatively  
Objective: render a university curriculum resilient

## START

- For each TEAM :
- choose a Curriculum Id. card
  - or create your own Curriculum Id. card with the Curriculum Id. canvas
  - Play through step 1 to 3

**STEP 1:**  
Building situational awareness about triggers (crises) and the impacts of triggers on a curriculum: a consequence scenario analysis.

**STEP 2:**  
Identifying keystone vulnerabilities and evaluate the resilience of the curriculum by analysing the sensitivity and preparedness of the curriculum to triggers.

**STEP 3:**  
Building adaptive capacity: prioritising triggers according to resilience and finding solutions for the ones for which the curriculum is the less resilient.

RECAP' CARD  
a summary of the game  
play

### STEP 1: "Building situational awareness":

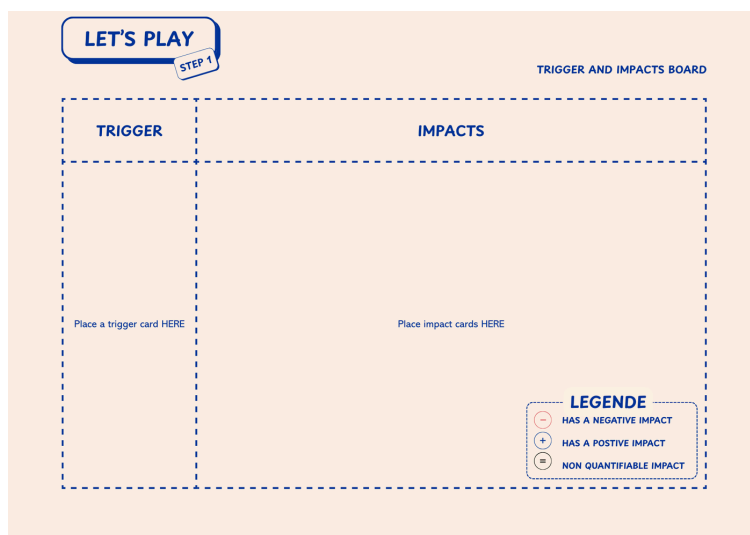
- Boards : for step 1 use the "Trigger and impacts board" and / or "Consequence scenario map"
- Choose ONE trigger card
- Place it on the board "Trigger and impacts"
- Choose impact cards released by the trigger and pose them on the board "Trigger and impacts"
- Place a negative OR positive OR equal sign token on a given impact card representing a negative / positive / non quantifiable impact
- Take a picture of the resulting board and repeat the process for other trigger cards
- Optional: Create a consequence scenario map linking the trigger (cause) with impacts (consequences) or an impact (cause) with other impacts (consequences). Use for links, arrow colors red / blue / black representing a negative / positive / non quantifiable impact

### STEP 2: "Resilience of the curriculum to the triggers"

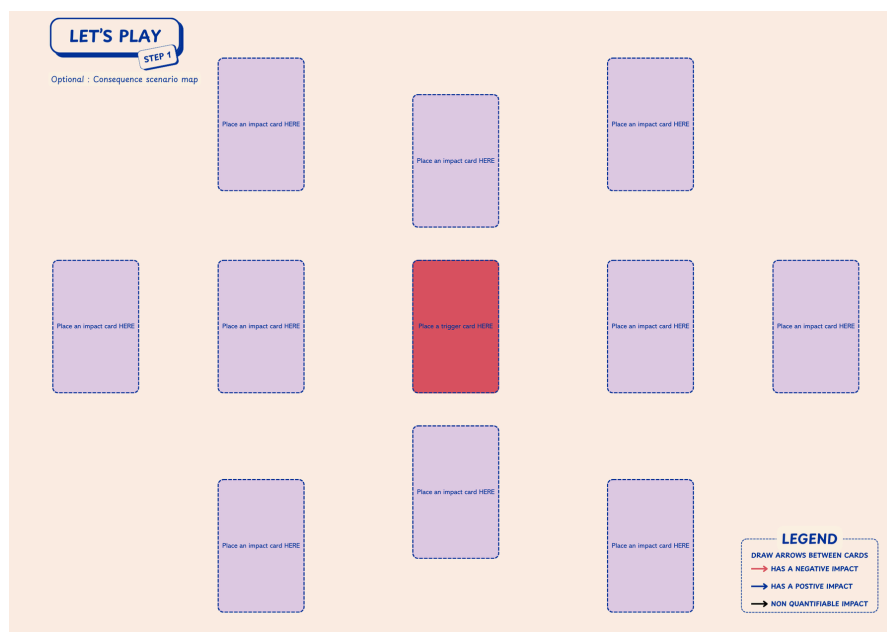
- Boards : for step 2 use the "Resilience board"
- For a given trigger of step 1:
  - a. Identifies the type of components (students, staff, balance sheet, elements of curriculum,...) affected by the trigger event (with the help of step1 impacts).
  - b. Identifies the ones which are important for the university given the Curriculum Id. card
  - c. Evaluates the sensitivity of the curriculum to a given trigger measured by the number of components affected by the crisis and their importance for the university
  - d. Thanks to the Curriculum Id. card, makes an approximate statement about the degree of preparedness of the university to a given trigger
  - e. Evaluate the resilience of the university to the trigger by placing the trigger card on the "Resilience board "
- Repeat steps a to d for all triggers chosen in step1

### STEP 3: "Building adaptive capacity"

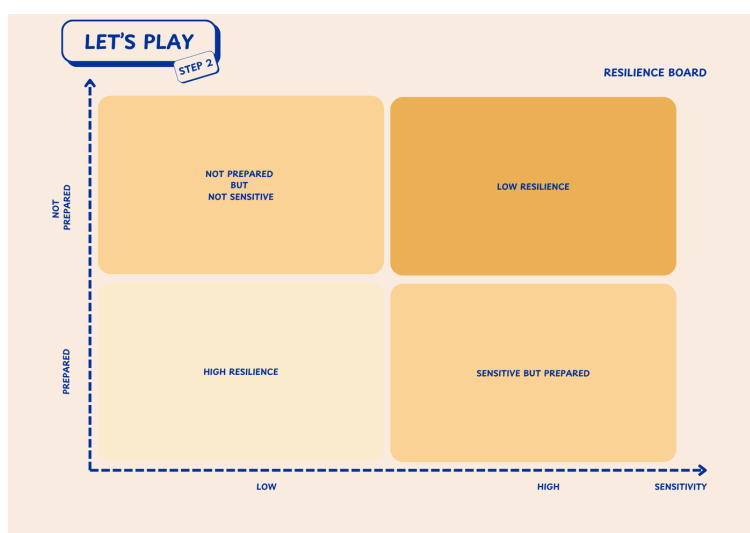
- Boards : for step 3 use the "Vulnerability board" and the "Solution board".
- Identify critical triggers to focus on by placing them on the vulnerability board. Triggers placed on the boxes "low resilience" or ("not prepared or sensitive" and "likely to happen") should be given priority.
- For the priority triggers, players discuss about transformative actions that renders the curriculum more resilient by completing the " Solution" board using "action" cards



Step 1 “Triggers and impacts board”. Used to analyze impacts of a given trigger.



Step 1 optional board: “Consequence scenario map”. Used for linking a trigger to impacts and impacts to impacts



Step 2 “Resilience board”. Used to evaluate the curriculum resilience to a given trigger

**LET'S PLAY** STEP 3

**VULNERABILITY BOARD**

LOW RESILIENCE			
NOT PREPARED OR SENSITIVE			
HIGH RESILIENCE			
	NON PROBABLE/HAPPENS EVERY 50 YEARS	LIKELY/HAPPENS EVERY 10 YEARS	HIGHLY PROBABLE/HAPPENS WITHIN 5 YEARS

Step 3 “Vulnerability board”. Used to rank triggers according to how vulnerable a curriculum is.

**LET'S PLAY** STEP 3

**SOLUTION BOARD**

One identified problem from step 1 and 2 that should be coped with	Proposed solution / type of actions	Who is concerned by the deployment of the solution / who is impacted	Expected impacts of the solution on curriculum (and HEIs)	Ease in feasibility: or expected time up to resolution, costs, constraints
Place a trigger card HERE	Place action cards HERE	Write down HERE	Write down HERE	Write down HERE

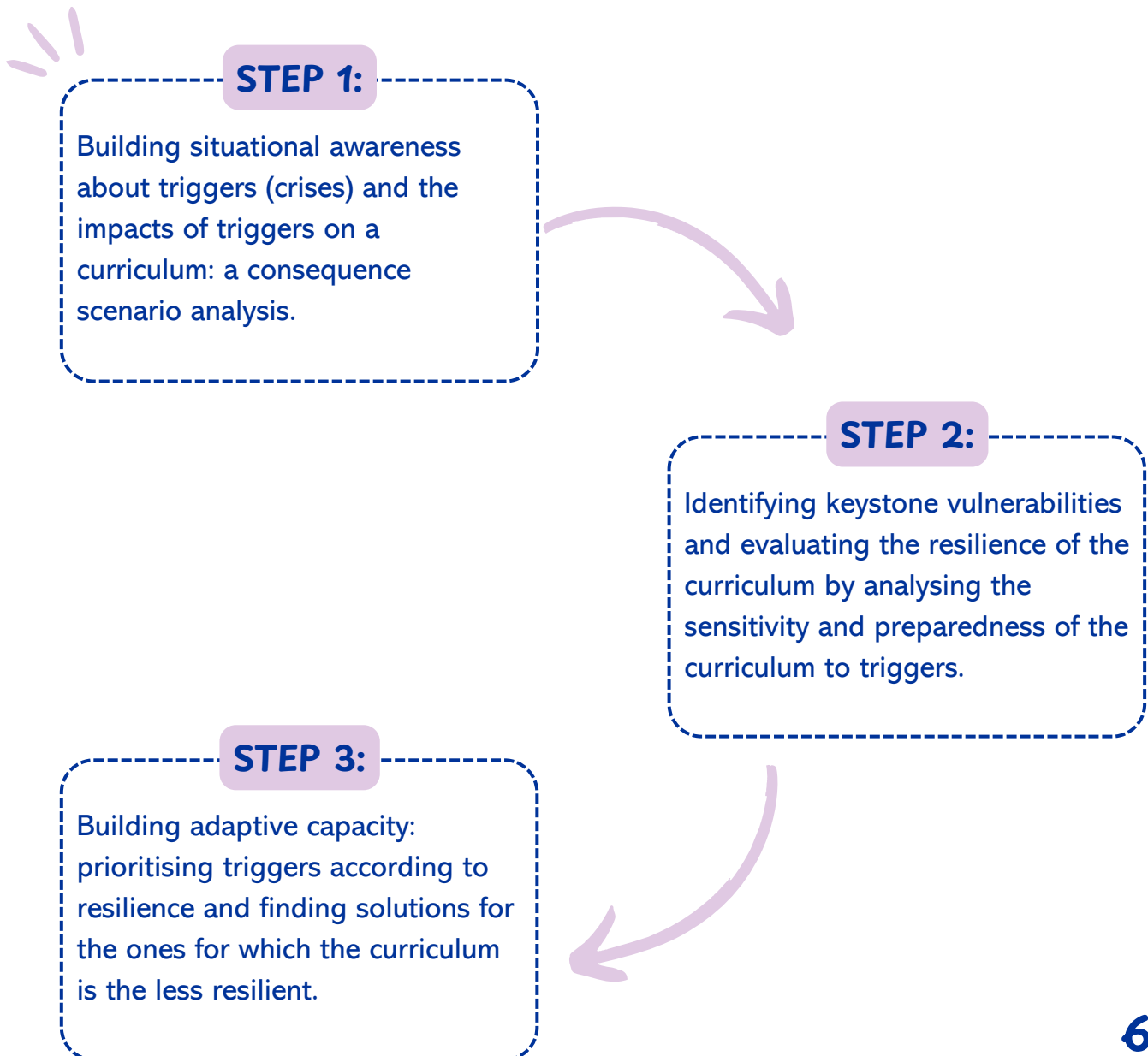
Step 3 “Solution board”. Used to design solutions for problematic triggers

# GAME SETTING

**A team** of 1 to 6 players acting cooperatively. Multiple teams

**Type of players:** knowledge of higher education is recommended.

**Objective:** render a university curriculum resilient by playing three steps





Create teams with 1 to 6 players.

For a game play with a game master , it is up to the game master to be directive by choosing the type of groups , curriculum Id cards and triggers to be played during a session.

### **Basic scenario A or B:**

A team gets one "Curriculum Id."card.

A "Curriculum Id." card describes a university curriculum and context.

Each team takes 5 minutes to become familiar with its Curriculum Id. card.

A RECAP card make a brief recap of all principles and instructions.

### **Advanced scenario:**

“Create your own contextual game”. A team may create its own Curriculum Id. card using the Curriculum Id canvas template. This scenario is recommended for program leaders of universities who want to reproduce their own university curriculum context.

**Nota bene in the case of large groups with multiple teams (necessitates more than one game box material)**

### **Scenario A**

If teams have a same Curriculum Id. card: teams represent the same university when they pick/receive the same Curriculum Id. card.

In this scenario, we suggest that each team simulates different crisis in step 1 by choosing different triggers. Then each team plays step 2; A collective debriefing session will assemble the different lessons learned by each team from step 1 and step 2. A collective decision is made on which problem to solve in step 3. Step 3 can be played by each team separately with a debrief session at the end or by all teams together.

### **Scenario B**

if teams pick different Curriculum Id. cards: in this scenario, teams are not concerned directly by the play of other teams although a debriefing session may be used for discussing the good practices learned from the game and extrapolation to real situations.

# LET'S PLAY

## “Building situational awareness”

- Boards : for step 1 use the “Trigger and impacts board” and / or “Consequence scenario map”
- Choose ONE trigger card
- Place it on the board “Trigger and impacts”
- For each trigger, choose impact cards released by the trigger and pose them on the board “Trigger and impacts”
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- Optional: Create a consequence scenario map linking the trigger (cause) with impacts (consequences) or an impact (cause) with other impacts (consequences). Use for links, arrow colors red / blue / black representing a negative / positive / non quantifiable impact

## “Resilience of the curriculum to the triggers”

- Boards : for step 2 use the “Resilience board”
- For a given trigger of step 1:
  - a. Identifies the type of components (students, staff, balance sheet, elements of curriculum,...) affected by the trigger (with the help of step 1 impacts)
  - b. Identifies the ones which are important for the university given the Curriculum Id. card
  - c. Evaluates the sensitivity of the curriculum to a given trigger measured by the number of components affected by the crisis and their importance for the university
  - d. Thanks to the Curriculum Id. card, makes an approximate statement about the degree of preparedness of the university to a given trigger
  - e. Evaluate the resilience of the university to the trigger by placing the trigger card on the "Resilience board "
- Repeat steps a to e for all triggers chosen in step 1

## “Building adaptive capacity”

- Boards : for step 3 use the “Vulnerability board” and the “Solution board”.
- Identify critical triggers to focus on by placing them on the vulnerability board. Triggers placed on the boxes “low resilience” or (“not prepared or sensitive” and “likely to happen”) should be given priority.
- For the priority triggers, players discuss about transformative actions that renders the curriculum more resilient by completing the " Solution" board using “action” cards

# LET'S PLAY

## **"Building situational awareness"**

- Boards : for step 1 use the "Trigger and impacts board" and / or "Consequence scenario map"
- Choose ONE trigger card
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# GAME RESILIENCE PRINCIPLES



## PRINCIPLE 1

### Trigger events:

Represent challenging circumstances that higher education institutions may face. Each of these events is a scenario for which consequences for the higher education institution must be evaluated.

4 categories of trigger cards: "competition and economy", "Environment", "technology" and Technology

Three capacities are applied through the game play:

1. Understanding the effects of a given trigger event by building a consequence scenario analysis.
2. Identifying vulnerabilities of a higher education institution curriculum and prioritizing the events to focus on.
3. Coping and adapting by designing transformative actions in response to these challenging triggers, based on the insights gained from 1 and 2.

## PRINCIPLE 2

One property of resilience is the ability of players to identify the consequences of a crisis trigger accurately. A consequence scenario analysis refers to the capacity of players to associate impacts to a given trigger.

### Impact Cards:

Represent potential consequences of a trigger card for a higher education institution. Impacts linked to the trigger may give rise to other impacts. Impacts of a given trigger may be positive or negative for the university.

### PRINCIPLE 3

Depending on its characteristics, each university has its own strengths and vulnerabilities. The sensitivity of a university curriculum to a given trigger is dependent on these characteristics given by a "Curriculum Id. card".

Curriculum CANVAS & Curriculum CARDS : the curriculum canvas specifies different dimensions describing a curriculum of a university. A team in the game can generate its own curriculum characteristics card using the "Curriculum" canvas. A curriculum card is an instantiation of the Curriculum canvas: a card describes a specific university curriculum across the dimensions of the canvas.

### PRINCIPLE 4

A team will increase the resilience of its curriculum by :  
Identifying vulnerabilities and strengths of the curriculum to the trigger depending on the impacts of the trigger and the characteristics of the curriculum  
Defining transformative actions by finding solutions using action cards for the triggers for which the curriculum is the less resilient

### PRINCIPLE 5

Through the simulation of virtual crises, a serious game helps stakeholders of a higher education institution to improve the resilience of their curriculum i.e. the capacity of a higher education institution to adapt to external or internal challenging circumstances and to potentially reconfigure services and curriculum as a preventive measure.