

Developing a Crisis Management Exercise Training in Industrial Environment: From Needs Analysis to Exercise Facilitation

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Learning Role-Playing Game Scenario Design for Crisis Management Training: From Pedagogical Targets to Action Incentives

Background

Why developing a LRPG design methodology for crisis management training ?

Since the 1970's → Continuous improvements of major accident prevention
But industrial accidents still occur

➡ Prevention based safety management is not enough

Protective system such as **emergency and crisis management** must be implemented and tested through specific exercises (+ SEVESO directive)

Nevertheless developing such exercises is **complicated, expensive and time-consuming** ➡ Companies may be reluctant to set them up



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Context

Expert'crise project: **ESF** funded training in emergency and crisis management for Seveso plants and critical infrastructures

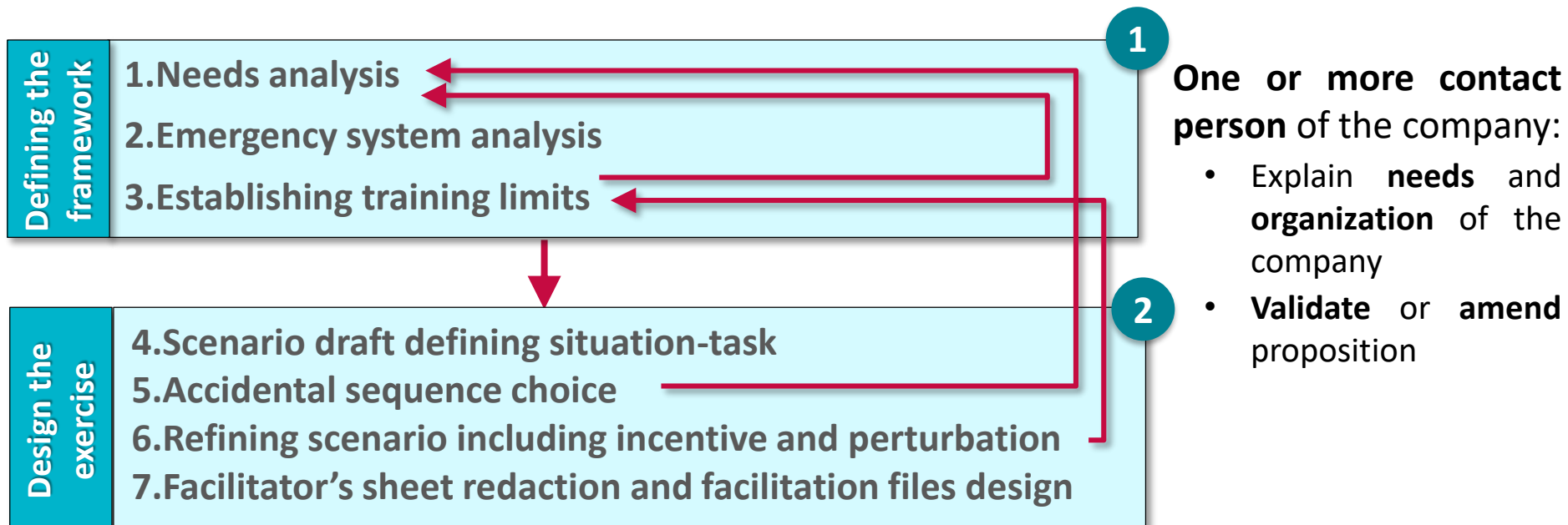
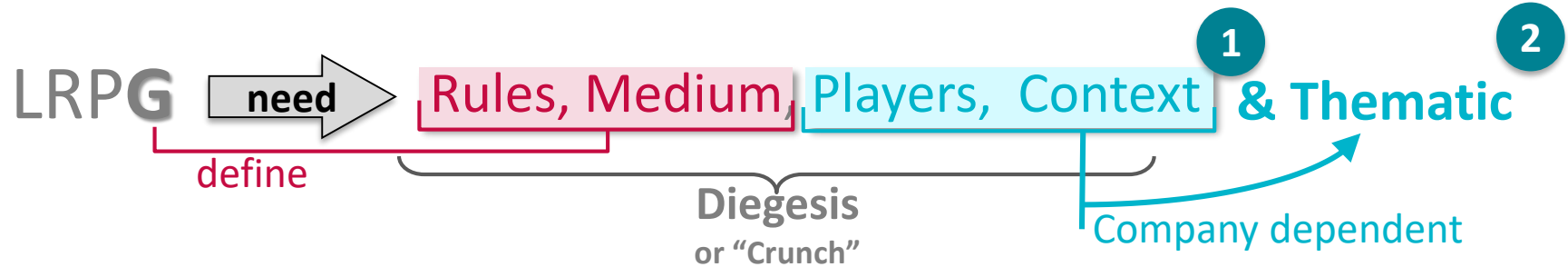
- Lectures and **Immersive exercises** (also testing emergency planning §6 Art.12 SEVESO 3)
- **9 Walloon Seveso** companies have participated to one of the seven exercises organized
 - Exercises on industrial sites with usual materiel, equipment, device...
 - Specific material arrangement (record & immersion) and human organization (observation & facilitation)

The design methodology is based on the **continuous improvement** throughout the project from 2015 to 2018



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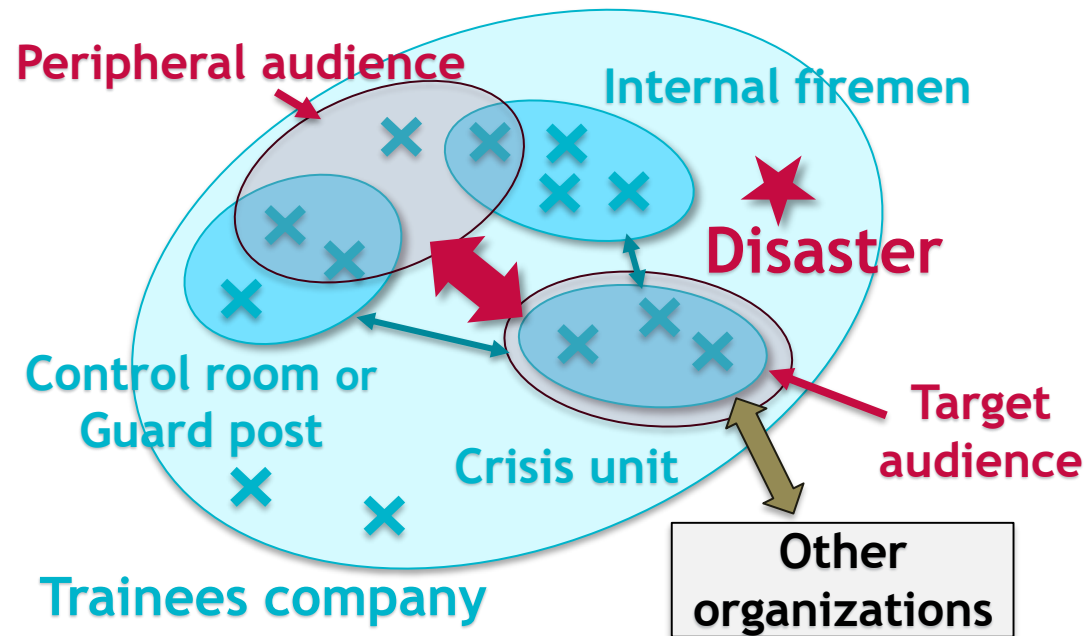
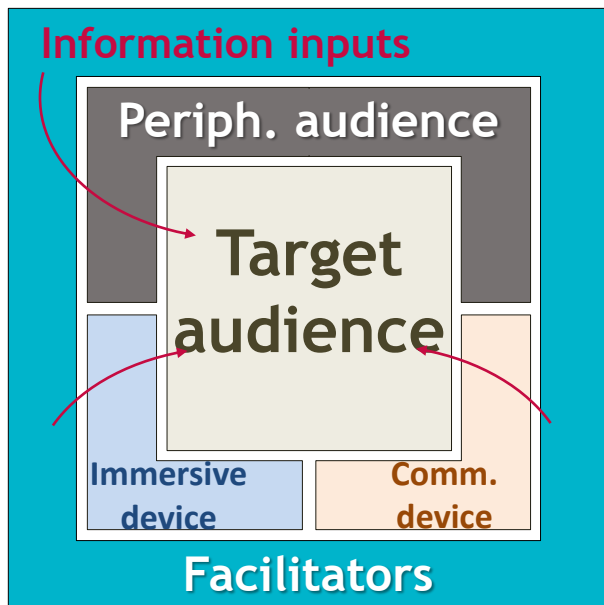
Structure of the methodology



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Scope and setting 1

Preliminary analysis lead to the scope usually divided in 3 levels: **operational**, tactical (optional) and **strategic**.

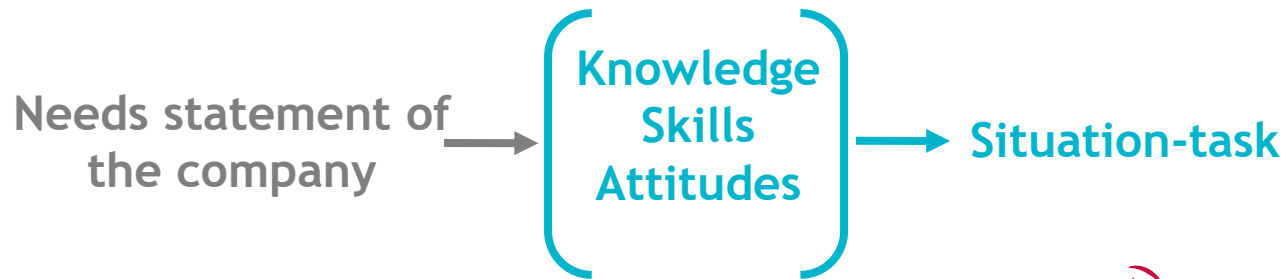


Direct facilitation is avoided and target audience remains alone during the exercise (only with observer).

Target audience interacts with facilitation trough **peripheral audience** (directly or not) mentored by facilitators or **indirectly with facilitators** playing other organization's roles (by phone, mail...)

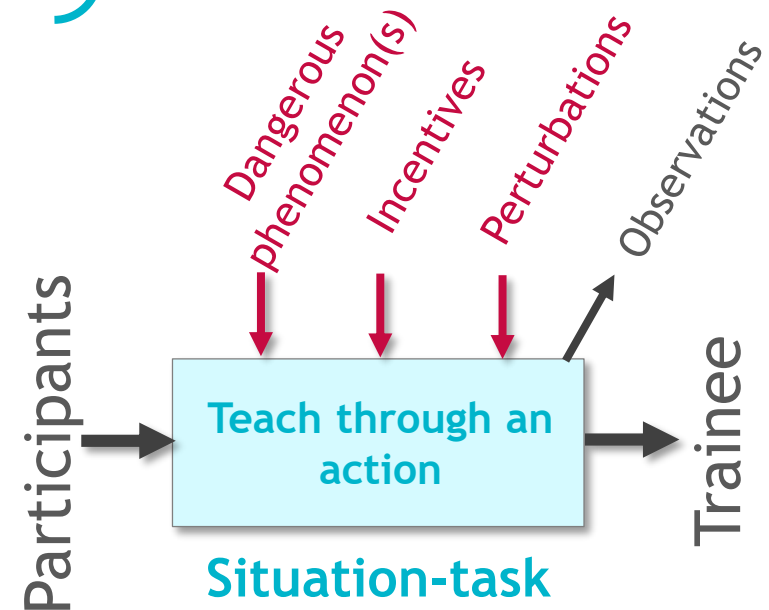
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The situations-tasks, hinges of the scenario 2



A **situation-task** aims to “force” trainees to **do an action** (*the task*) under **special circumstances** (*the situation*) through serious game interface and **gameplay**.

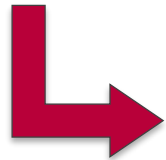
The task is a mean to involve trainees in a **reasoning process** harnessing knowledge targeted.



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Accidental sequence and first draft 2

Accidental sequence = Causes of the accident, the accident, dangerous phenomenon, and asset affected.



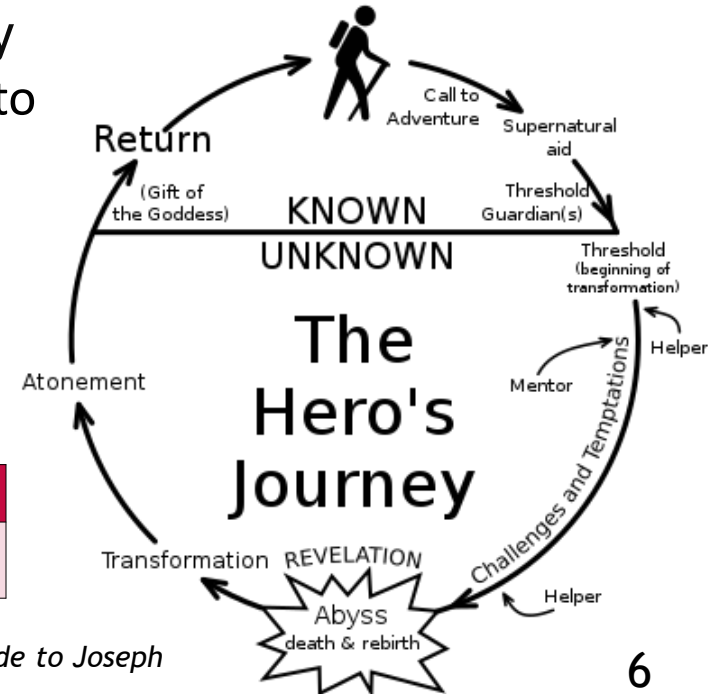
Justification for situations-tasks' **perturbations** and **incentives**

Crisis/Emergency LRPG "fluff" (in opposition with the "crunch")

Situations-tasks are organized in a chronology inspired by **the hero's journey** (J.CAMPBELL) into a scenario

Scenario explains the diegesis 1 of exercise and develops the **sequence of input** to the target audience.

Time block	Situation-task	Pedagogical target	Incentive/Perturbation



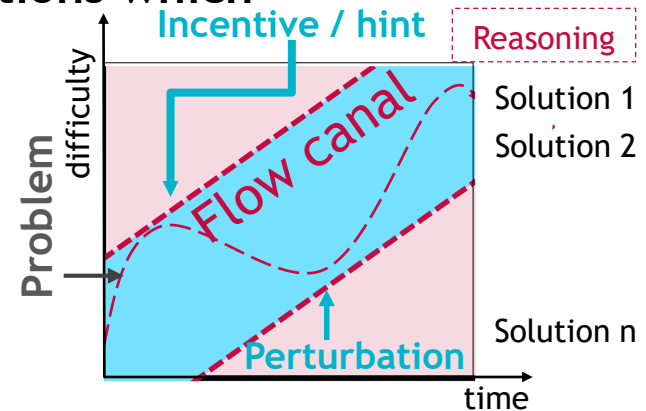
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Refining the scenario until the facilitator's sheet 2

Situation-task ➔ How to have people do a task ?

➔ Choice of relevant incentives and perturbations which

- Lead to the task to do
 - Are realistic enough
 - Are not too obvious
- } Keep trainee in a *flow* state



Once inputs are defined, a 5-minutes meshing chronology is established :

Time block	Situation-task	Pedagogical target	Incentive / Perturbation	Facilitator sheet	Precise timing
14h00-14h15	Warning chain. Crisis unit establishment	Procedures check	Imprecise alert Weak signals No feedback from operators	Intervention chief	14h00: Small event 14h00/5: Information check not successful 14h15: Warning confirmation. Major accident

Projet Expert'crise

Premiers résultats

Conclusions and prospects

Methodology allows to design efficiently emergency and crisis exercises for chemical industries.

But require a high level of competences to choose and arrange situations-tasks  cannot be directly used by SHE manager.

Next step : Identifying a **limited number of situations-tasks** that can be staged in exercises to offer an user-friendly method for SHE

Design a pedagogical process to **conceive situation-task** and
Design a methodology to **arrange situation-task** in the scenario to keep trainees focus

Questions ?