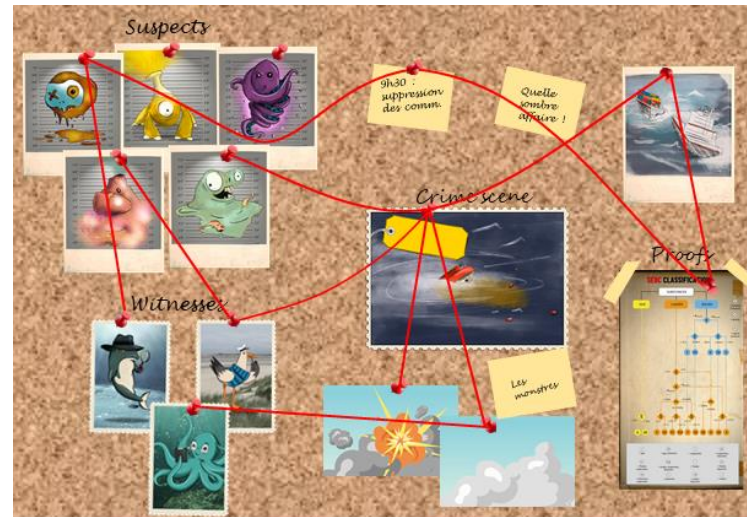# WP6. Dissemination strategy, capitalisation and visibility

## Task 6.5 Development of a proof of concept of a serious game for marine pollution crisis management

BONY A., BOUILLET P., SECHEPPET M., TIXIER J.
ARMINES / IMT MINES ALES

# Plan

1. Introduction
2. Working process
3. Results
4. Dissemination
5. Conclusion and perspectives

# 1. Introduction

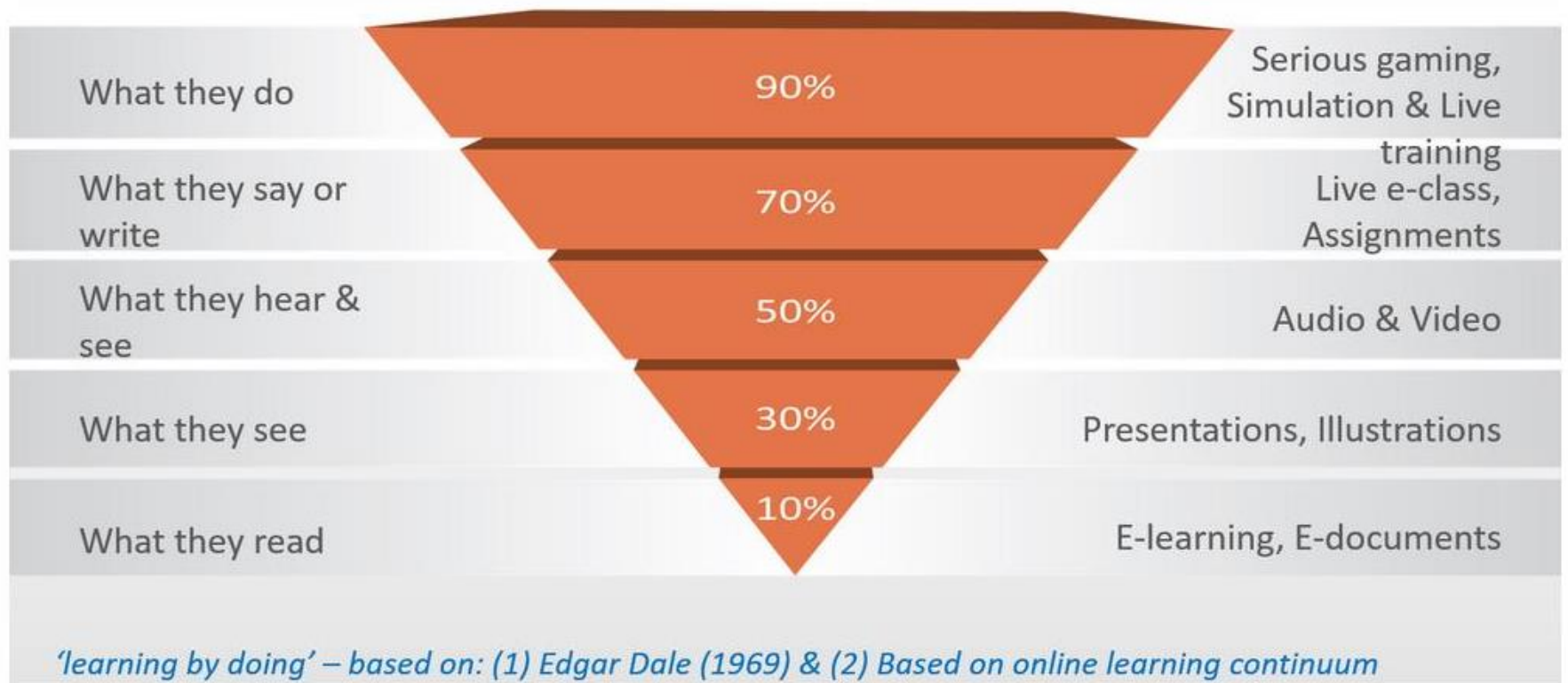# WP6.5 Objective and context

Developing a **proof of concept** for a serious game to help crisis managers deal with accidental marine pollution by HNS

- crisis management phases

- understanding the issues related to pollutants discharged into the seawater

- collaborative work involving reflection

# WP6.5 Objective and context



| | | |
|---|---|---|
| What they do | 90% | Serious gaming, Simulation & Live training |
| What they say or write | 70% | Live e-class, Assignments |
| What they hear & see | 50% | Audio & Video |
| What they see | 30% | Presentations, Illustrations |
| What they read | 10% | E-learning, E-documents |

'learning by doing' – based on: (1) Edgar Dale (1969) & (2) Based on online learning continuum

# 2. Working process

# WP6.5 Steps of the work
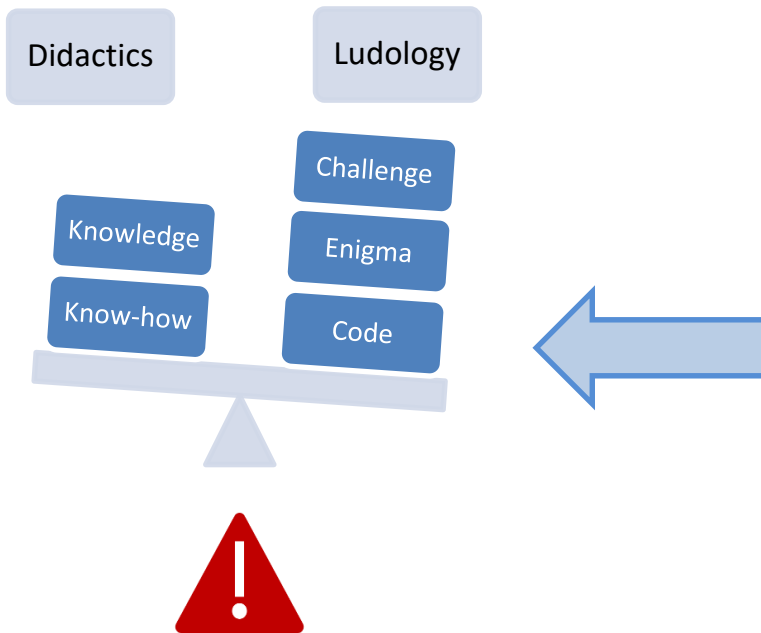
*1. Litterature review*

- Serious game
- Marine pollution

# WP6.5 Steps of the work

## 2. Participation in serious games as a player or observer

Empirical finding

**Observation: the game often takes precedence over the didactic content**

Didactics

Ludology

Challenge

Knowledge

Enigma

Know-how

Code

*Example: remembering the decoding mechanisms but forgetting the main message*

What did you learn during the game?

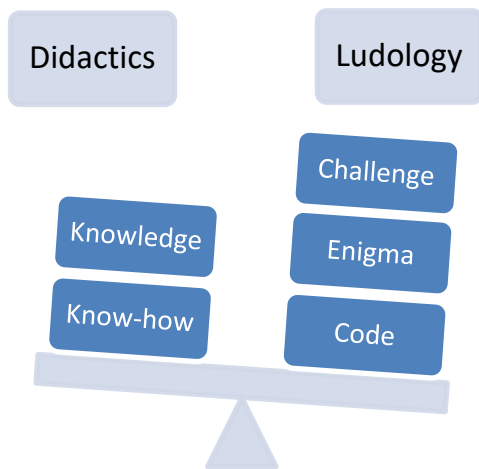I thought a lock always worked with numbers! I learned that a lock can be with letters!

Do not lose sight of learning in favour of play (Djaouti, 2015)

# WP6.5 Steps of the work
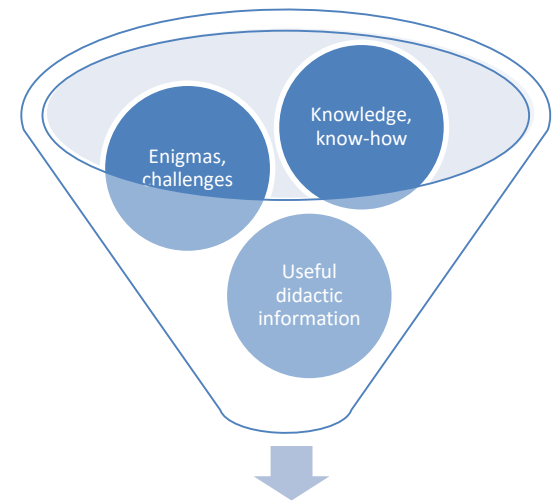
*2. Participation in serious games as a player or observer*

Empirical finding

Design intention

Didactics

Ludology

Challenge

Knowledge

Enigma

Know-how

Code

Rebalancing the
Pedagogy / Fun
Allow the mix
Pedagogy / Ludology

Enigmas, challenges

Knowledge, know-how

Useful didactic information

Reinforcing didactic message

Do not lose sight of learning in favour of play (Djaouti, 2015)

Mechanical means contribute to the content of the messages
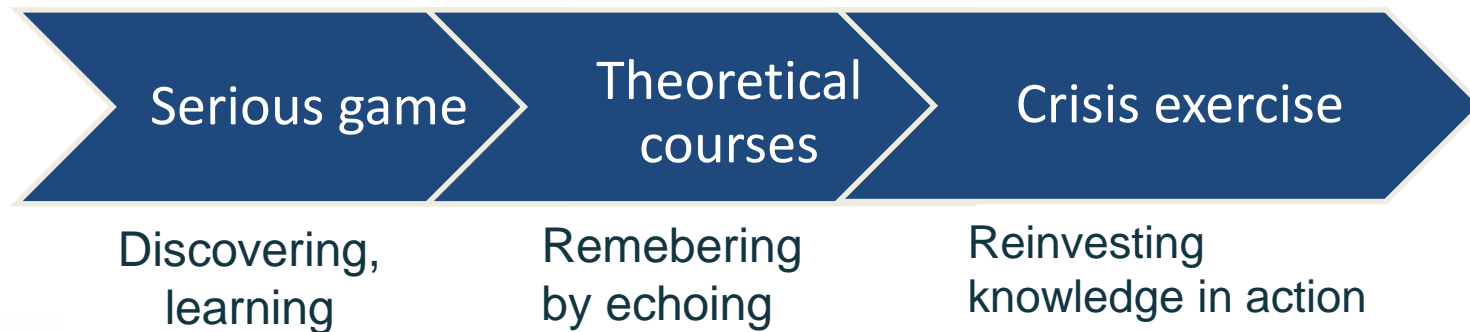Retain the contents of the messages rather than the mechanical means

# WP6.5 Steps of the work

## *3. Interviews with end-users (CEDRE)*

- Target audience (who, and how many)
- Skills to developp

→ Discover specific knowledge about the chemicals behaviour and elements of organisational response

**« Discovery » game**

Raise awareness, open up, prepare

Part of a training program

| Serious game | Theoretical courses | Crisis exercise |
|---|---|---|
| Discovering, learning | Remebering by echoing | Reinvesting knowledge in action |

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# WP6.5 Steps of the work

## *4. Definition of guiding principles of the game*

| Puzzle Games Inspiration |
|---|

- Game based on the principle of enigmas, which are as many tests

| Reverse Escape Game |
|---|

- to get into a police academy

| Linear structure |
|---|

- The puzzles follow one another in a linear way : each puzzle must be solved to move on to the next

# WP6.5 Steps of the work

## *4. Definition of guiding principles of the game*

- Built around learning while systematically checking the playful dimension

- Design a game that is accessible and varied in terms of didactic content, media and game mechanics

- No facilitator during the game phase

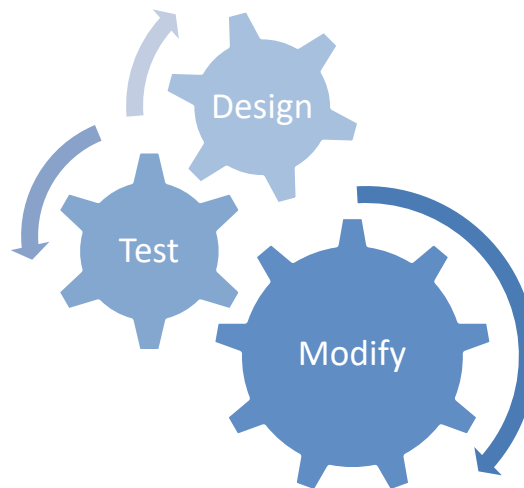  ❯❯ Hybrid tool : handling of physical objects / digital

# WP6.5 Steps of the work

## *5. Iterative and agile design (Lhuillier, 2011)*

o Design and testing of puzzles at regular intervals by the designers (at least one meeting per week)

**Design loop for a challenge**

Design

Test

Modify

Changes to :
- challenges,
- to challenges elements,
- to scenario elements

o Tests with a varied audience (students, researchers, CEDRE)

# Examples of tests carried out

**May 24th 2022**
Test with 4 players (2 trainees, 1 computer engineer and 1 teacher-researcher from IMT Mines Alès)

**April 7th 2022**
Test with 4 players (3 trainees, 1 PhD student (IMT Mines Alès)

**May 31st 2022**
Test with 3 players (Cedre and IMT Mines Alès)

**August 31th and September 1st 2022**
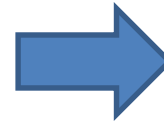Test at Cedre (Brest) 2 teams of 4 players

# WP6.5 Steps of the work

## *6. Graphic design*

- Illustrations :
  Be in adequation with the chosen universe
  ↗ Immersion of the players

- Infographic
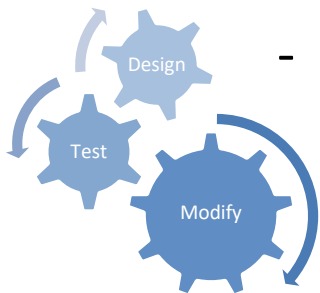
→ Subcontracted to an illustrator and a graphic designer

# WP6.5 Steps of the work

*7. Development of the digital interface (internal)*

o Choice of tool according to development and use constraints
  - Use of tools for e-learning purposes : Active Presenter

o Development of the digital interface

- Rethinkink how to
  - validate solutions
  - and help learners
    → changes in the game

- Technical solutions to vary the ways of validation
    → To avoid repetition of game mecanics and boredom

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# WP6.5 Steps of the work

## *8. Finalisation of the game kit*

- To give a complete game kit that can be used by the partners independently

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Union Civil Protection

# 3. Results

# WP6.5 Niovelius game

➢ *Specifities of the game*

- Fictional and playful universe

  - police investigation
  - fictional and slightly offbeat

= trainees are applicant to become investigators in a team specialized in the fight against pollu-criminals responsible for severe crimes against the seas and oceans
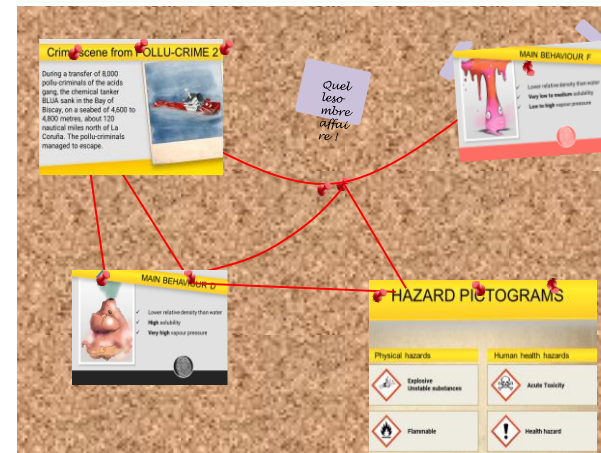
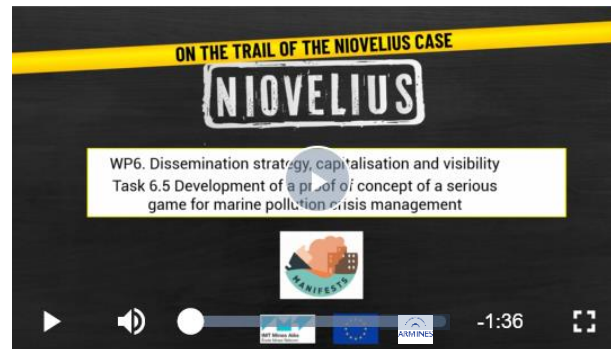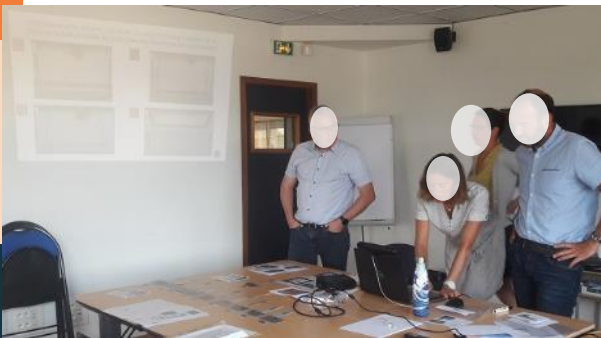# WP6.5 Niovelius game

## ➤ *Specifities of the game*

- Hybrid game
  - o Handling of 'physical' objects

# WP6.5 Niovelius game

> *Specifities of the game*

- Hybrid game
  - Handling of 'physical' objects
  - Digital interface
    - answers to puzzles validated on a developed software tool
    - audio messages



https://manifests-project.eu/medias/#MANIFESTS%20Serious%20game

# WP6.5 Niovelius game

➢ *Specifities of the game*

- Hybrid game
  - Handling of 'physical' objects
  - Digital interface
    - answers to puzzles validated on a developed software tool
    - audio messages

  - Pedagogic interest :  allows for a variety of ways to act ... to encourage different ways of developing and learning

  - Practical implementation in training courses: no facilitator needeed during the game

# WP6.5 Niovelius game

➢ *General structure of the game*

| Introduction | Mission 1<br>Chemical behaviours | Mission 2<br>Pollution management | Epilogue |
|---|---|---|---|



Briefing

Challenge 1 · Challenge 2 · Challenge 3

Challenge 4 · Challenge 5

Débriefing

🔒 Padlocking access to « new documents »

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# WP6.5 Niovelius game

## ➢ *General structure of the game*

Introduction

Mission 1
Chemical behaviours

Mission 2
Pollution management

Epilogue



Briefing

Challenge 1   Challenge 2   Challenge 3

Associated hazards and impacts

Challenge 4   Challenge 5

Purely playful riddle

Maritime pollution management phases

Débriefing

**Technical abilities**

Chemical behaviours understanding

difficulty

**Crisis management abilities**

Cooperation, verification, analysis, dashboard

# WP6.5 Niovelius game

> *Summary*

Fictional universe

15 min briefing

2 hours of play

45 min debriefing

Total playing time: 3 h

Detective game

NIOVELIUS

Half investigation – half escape game

Team of 4 players

Several teams can play simultaneously

Hybrid format

1 facilitator for briefing/ debriefing

# WP6.5 Niovelius game kit

➢ *Delivered items*

Transportable case

Printable document of the physical material to be used (.pptx)

Digital application of the game (off-line)

Facilitation docs

(.docx)

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# WP6.5 Niovelius game kit

## ➤ *Delivered items*

Facilitation docs

(.docx)

ON THE TRAIL OF THE NIOVELIUS CASE
**NIOVELIUS**
**Facilitator's booklet**

## Contents

# WP6.5 Niovelius game kit

➤ *Delivered items*

Facilitation docs

Printable document of the physical material to be used (.pptx)

Digital application of the game (off-line)

(.docx)

(.pptx)

(.docx)

# 4. Dissemination

# WP6.5 Dissemination

➢ *To end-users: 1 game kit in English and French versions*

> Game kit : « Paper game materials » + software tool both optimised for easy translation into other languages

➢ *Towards the scientific community*

- Symposium "Faire résultat(s) dans les recherches en éducation. Pourquoi ? Avec qui ? Comment ?" → accepted abstract
- To come: 1 to 2 publications in international papers, 1 to 2 conferences in "Risk theme" or "Education Sciences".

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# 4. Conclusions and prospects

# WP6.5 Conclusions and Perspectives

➢ *Conclusions*

- 1 game kit « NIOVELIUS »

➢ *Perspectives*

- Final tests with end-users (final meeting on March 23$^{rd}$ 2023)
  - o Consideration of users feedback

- Academic dissemination through publications/conferences

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