

Use Case 1

Patients' Rights & Innovative Teaching Strategy

Authors

AlbaSim:

Dominique Jaccard, Pierre-Benjamin Monaco, Maxence Laurent,
Sandra Monnier, Audrey Huguenin

Partnership for the use-case

HESAV:

Dominique Correia de Oliveira, Delphine Bonnard,
Songül Yavavli, Félicia Bielser

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v1.0: August 2022. Added overview of design elements, assessment of the design process, evaluation of the game

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PRITS as a Use Case

The PRITS project is used as a use case for the co.LAB collaborative methodology and the improvement of the Wegas co-development platform.

PRITS Project

The Patient's Rights & Innovative Teaching Strategy (PRITS) project aims at developing a serious game to support health students in learning about patient rights.

The overall objective was to develop a serious game that will support the training of health professionals in the field of patients' rights by encouraging knowledge acquisition and practical skills development.

Collaborative multidisciplinary team

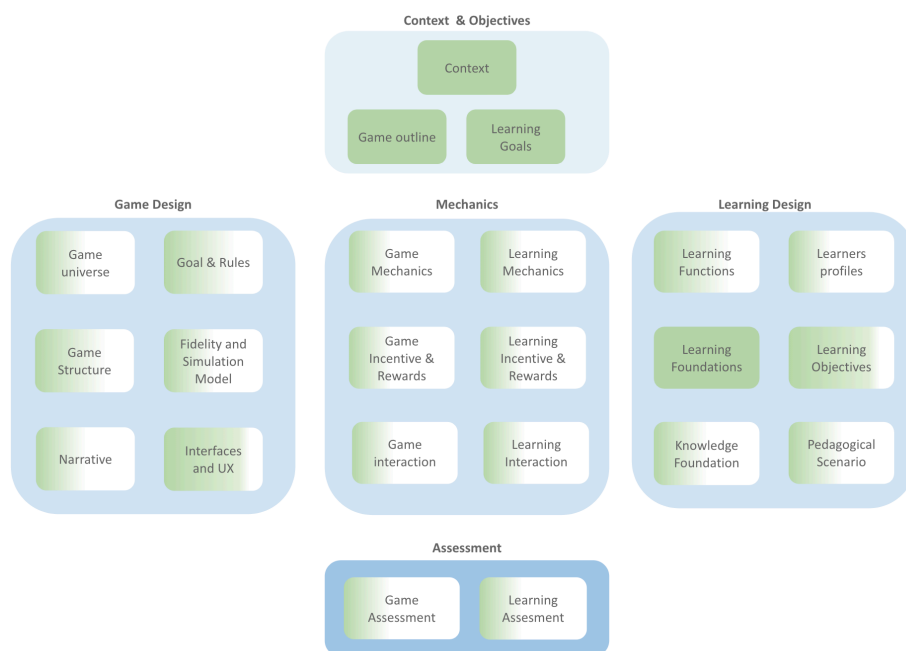
The development of the serious game followed an iterative and collaborative approach. As from the beginning of the project, an interdisciplinary team from Haute Ecole de Santé Vaud (HESAV) and HEIG-VD AlbaSim collaboratively designed and developed the serious game. The team included lawyers specialized in patient's rights, teachers, an educational scientist, a serious game designer, a graphical designer and two computer scientists.

Co-Design Methodology

The project enabled a test of the co.LAB co-design framework. As the co-design platform was still in development, we used shared online documents that reproduced the co.LAB co-design framework.

The co-design framework enabled to collaboratively design the serious games and was also used as a project monitoring tool.

The overall design document based on the co.LAB framework led to a 40 pages design document.



Screenshot of an online sharing document used for project monitoring

Overview of Design Elements

The overall design document based on the co.LAB framework led to a 40 pages design document. Hereafter we present an abstract of some design elements in each of the category of the co.LAB framework.

Context and objectives

Flexible context of use with possibilities of using the serious game in face-to-face or distant learning with an average number of 150 students per training session. The game should be used as an exercise after theoretical lectures or for problem-based learning approaches.

Learning goals : Providing participants with the knowledge and methods necessary to establish a quality and safe therapeutic relationship, including clinical, environmental and patient rights elements.

Game outline : The player takes the role of a carer working in a care environment. His/her objectives are to meet patient's needs while respecting patient rights. To do this, he/she must be aware of the clinical and legal elements of the situation in order to make the right decisions.

Learning design

At the end of the serious game, students will be able to

- know how to search for legal information to resolve a situation,

- identify and consult relevant normative documents,
- establish a decision-making algorithm for the specific situation, explain choices in accordance with the patient's rights.

Learning theories should enable these learning objectives to be achieved. Constructivism is the most purposeful approach for developing a systemic consideration of care. In the serious game, students should be encouraged to develop their knowledge through experiences in dialogues with virtual patients. Through those experiences, students should be pushed to search for meaning, to adapt their mental models from “quality of care only” to “quality of care and respect for patients' rights”.

Mechanics

The main game mechanic is dialogues with virtual patients. This mechanic is aligned with the main learning mechanics which are applying theory to solve a complex situation, exchanging between students on the choice to be made in the simulation, answering to questions asked by virtual health actors (doctors, lawyer).

For game and learning incentives, we rely on Nicholson, 2014, A RECIPE for Meaningful Gamification, with the following motivational elements:

- Autonomy (being able to choose between several paths). In dialogues, students always have several available choices. The serious game offers a possibility to partially choose the order of the patients to be seen.
- Mastery (learning to the point of mastering a skill). Students should go from simple cases, where they learn a first rule, then be able to re-apply this rule and thus having the feeling of mastery. Only then, they will discover new difficulties.
- Relatedness (not feeling alone, feeling connected to other people). Relatedness will be introduced during training sessions by having students working in teams, discussing to choose the most relevant answer in the dialogues.

Game design

Depending on the educational objectives, the search for cognitive and emotional fidelity is more important than sensory fidelity (sounds and images) (Ye, fidelity in simulation).

Thus, for the simulation model, we will develop small dialogues that must be coherent and correspond to possible professional situations. However, the simple options offered in the dialogues should lead to complex reflections on the trade-off between quality of care and patients' rights. To achieve this, a simple definition of dialogue as a finite state machine should be sufficient.

Assessment

The learning assessment will include both a performance assessment and a subjective assessment. The performance assessment will be done through pre-test and post-test questionnaires. The subjective learning assessment we will use an adaptation of Fokides

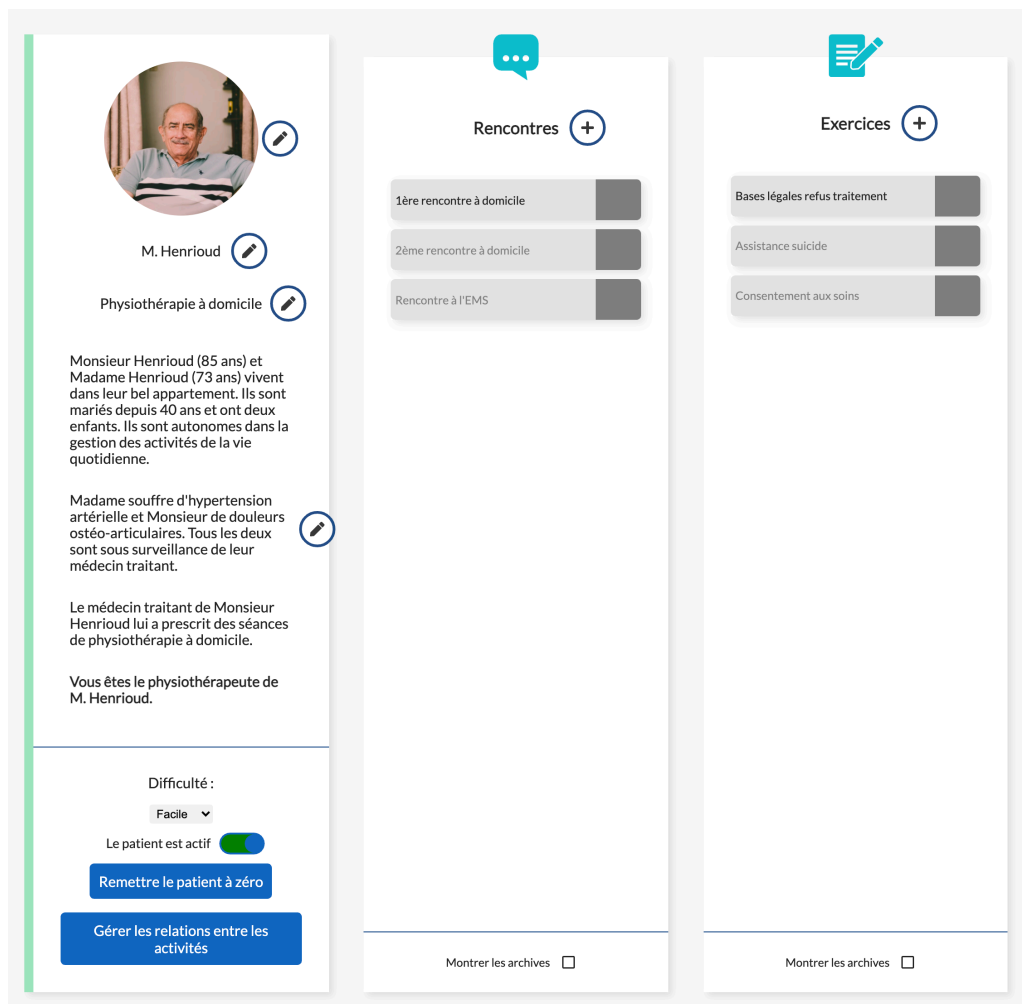
questionnaire (Fokides subjective learning effectiveness). The game assessment will be done with the AttrakDiff standard questionnaire.

Co-Development with Wegas

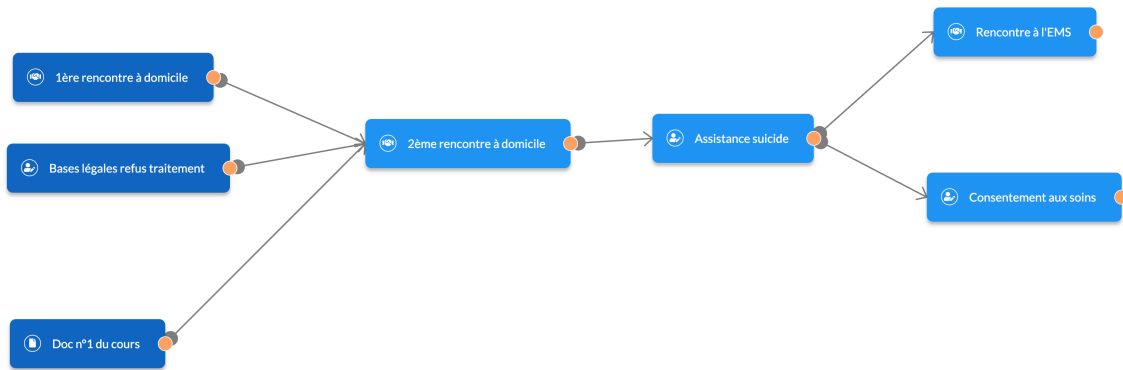
The Wegas authoring system allowed the whole team to develop the serious game simultaneously, thus facilitating co-creation. Computer scientists and designers developed the game at the same time that legal experts created and entered the content. Narrative contents were defined and implemented through the Wegas authoring dialogue interfaces.

We used an iterative approach with frequent coordination meetings between teachers, computer scientists and experts from legal or game aspects.

Hereafter some screenshot of the online editing system.



Content editor. Trainer may edit content through the Patient Editor

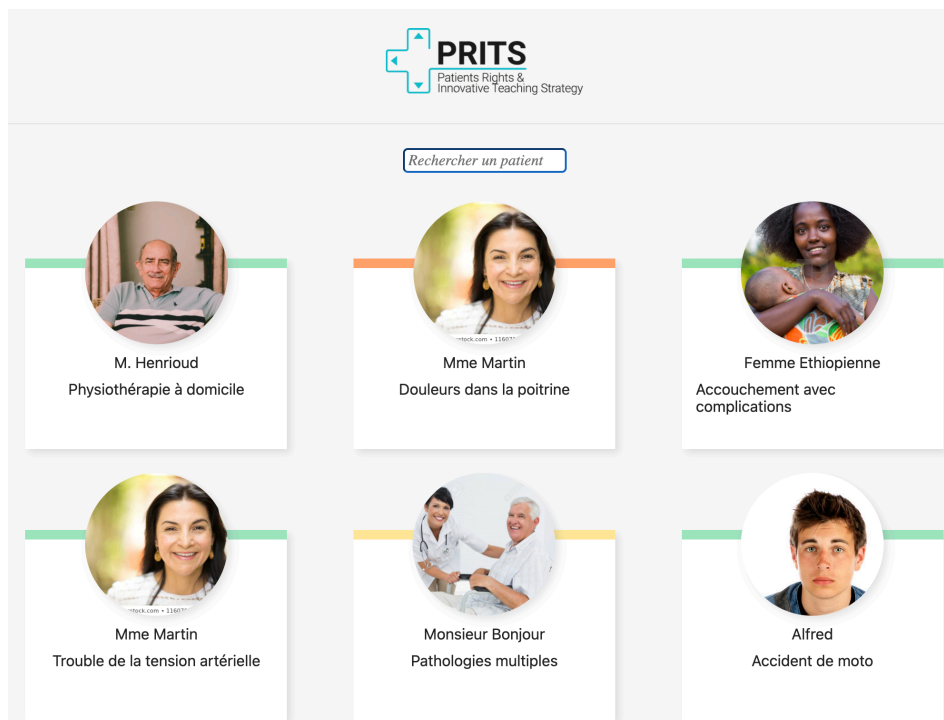


Game Structure Editor. This enable to describe how activities inside the game will be activated.

The PRITS serious game


Following figures presents some screenshots of players interfaces. A detailed description of game goals, rules and development had been published in (De Oliveira et al., 2021) :

- De Oliveira DC, Bielser F, Bonnard D, Songuel Y, Jaccard D. *A Serious Game for Patient' Rights Education*. 2021 IEEE 9th Int. Conf. Serious Games Appl. for Health 2021. p. 1–6. [doi: 10.1109/SEGAH52098.2021.9551898]



Patients List

1ère rencontre à domicile



En tant que physiothérapeute, vous vous rendez au domicile de M. Henrioud. Votre objectif: mettre en place un plan thérapeutique qui vise à améliorer et/ou atténuer les douleurs lors de la mobilisation.

Bonjour. Que faites-vous ici ?

Je viens comme convenu pour les soins de physiothérapie.

C'est gentil, mais je refuse tout soin et vous demande de partir.


En ordre, je peux partir. Mais je vais devoir informer votre médecin.

Mme Henrioud, dans la cuisine, a entendu la conversation. Elle vient vers vous et vous dit: "Je vous en prie, restez. Mon mari est très fatigué et de mauvaise humeur." Elle demande à son mari

Alors, comme le propose votre femme, nous pourrions au moins essayer de débiter le traitement ?

M. Henrioud souhaitez-vous débiter votre traitement de physiothérapie?

Dialogue with a Patient



M. Henrioud

Physiothérapie à domicile

Monsieur Henrioud (85 ans) et Madame Henrioud (73 ans) vivent dans leur bel appartement. Ils sont mariés depuis 40 ans et ont deux enfants. Ils sont autonomes dans la gestion des activités de la vie quotidienne.

Madame souffre d'hypertension artérielle et Monsieur de douleurs ostéo-articulaires. Tous les deux sont sous surveillance de leur médecin traitant.

Le médecin traitant de Monsieur Henrioud lui a prescrit des séances de physiothérapie à domicile.

Vous êtes le physiothérapeute de M. Henrioud.

Rencontres

- 1ère rencontre à domicile
- 2ème rencontre à domicile
- Rencontre à l'EMS

Exercices

- Bases légales refus traitement
- Assistance suicide
- Consentement aux soins

Available

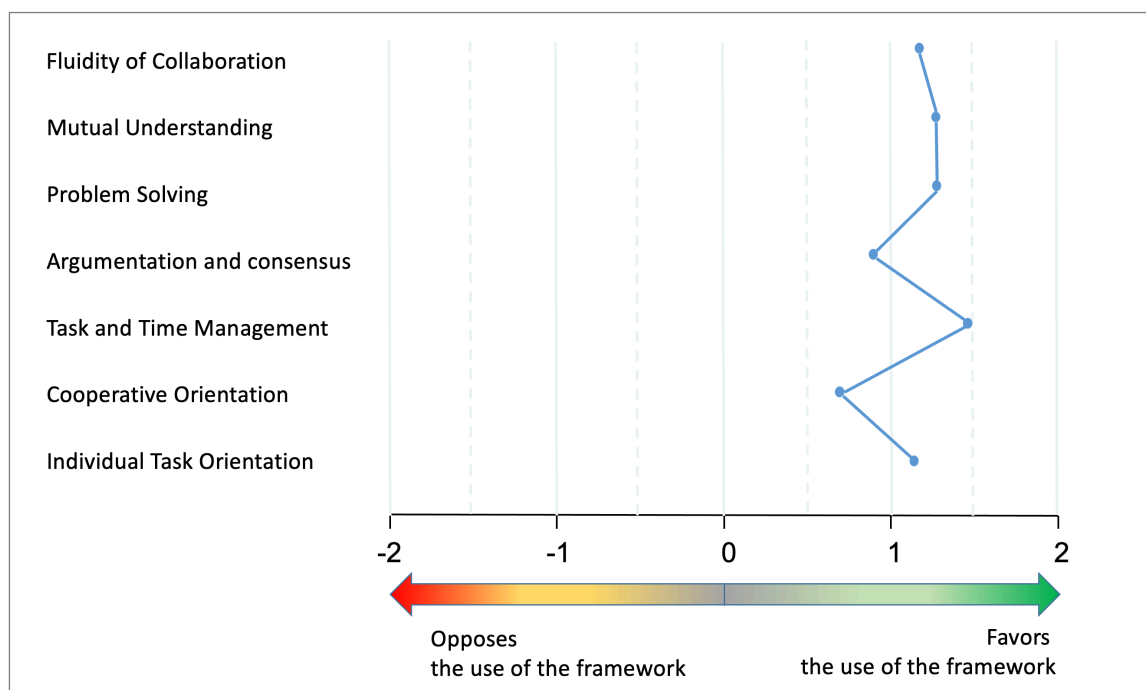
Dialogues and Exercises Based on Previous Achievements

Assessment of the Design Process

At the end of the design process, we evaluated how the co.LAB framework had impacted the collaboration within the design teams. We evaluated the impact of the co.LAB framework both on the PRITS project and into another project: the MIMS project. In the MIMMS project, a team of 10 persons, including game designer, computer scientists, medical doctors, and trainers, used the co.LAB framework for the design of a serious games in the field of major incidents medical management.

For both projects, we assess the collaboration using Burkhardt's framework (Burkhardt et al., 2009), with its 7 dimensions of the collaboration.

Overall results are in favor of the use of the co.LAB framework. Team members of both projects (n=11) perceived that co.LAB had a positive impact on all dimensions of the collaboration.



Overall assessment the influence of the co.LAB framework on Burkhardt's 7 dimensions of collaboration.

Main recommendations of those users of the co.LAB framework are linked to its necessary implementation into a collaborative web platform.

Main limitation of the use of the co.LAB framework are linked to team competencies in serious games design. Most of team members believe that an expert in serious game design is of great help. But the argue that if no expert are available, then the co.LAB framework will be an help for replacing the expert.

Complete result of the evaluation of the co.LAB framework have been published in (Jaccard et al., 2021) :

- Jaccard D, Suppan L, Bielser F. Contribution of the co.LAB Framework to the Collaborative Design of Serious Games: Mixed Methods Validation Study. JMIR Serious Games 2021;9(4). [doi: 10.2196/33144]

Evaluation of the Game

First uses of the PRITS serious game with health students had been done in September 2021. Approximately 270 nursing students used the PRITS .

Students evaluated the game using the French version of AttrakDiff standard questionnaire (Lallemand et al., 2015).

Results show that students had an overall positive perception of the game, both for the motivational and learning aspects.

Word-pairs

Attrakdiff use words-pair to evaluate user experiences of a system. Results of word-pairs evaluation show a positive evaluation for each of the words-pairs. The field that is less positive is the challenging aspect of the serious game. This let suppose that students are ready for a more challenging game, both for the content of the game and for its pedagogical implementation.

		Paires de mots : Global							
		-3	-2	-1	0	1	2	3	
Qualité pragmatique	Technique								Humain
	Compliqué								Simple
	Pas pratique								Pratique
	Fastidieux								Efficace
	Imprévisible								Prévisible
	Confus								Clair
	Incontrôlable								Maîtrisable
Qualité hédonique-stimulation	Conventionnel								Original
	Sans imagination								Créatif
	Prudent								Audacieux
	Conservateur								Novateur
	Ennuyeux								Captivant
	Peu exigeant								Challengeant
	Commun								Nouveau
Qualité hédonique-identification	M'isole								Me sociabilise
	Amateur								Professionnel
	De mauvais goût								De bon goût
	Bas de gamme								Haut de gamme
	M'exclut								M'intègre
	Me sépare des autres								Me rapproche des autres
	Non présentable								Présentable
Attractivité globale	Déplaisant								Plaisant
	Laid								Beau
	Désagréable								Agréable
	Rebutant								Attirant
	Mauvais								Bon
	Respoussant								Attrayant
	Décourageant								Motivant

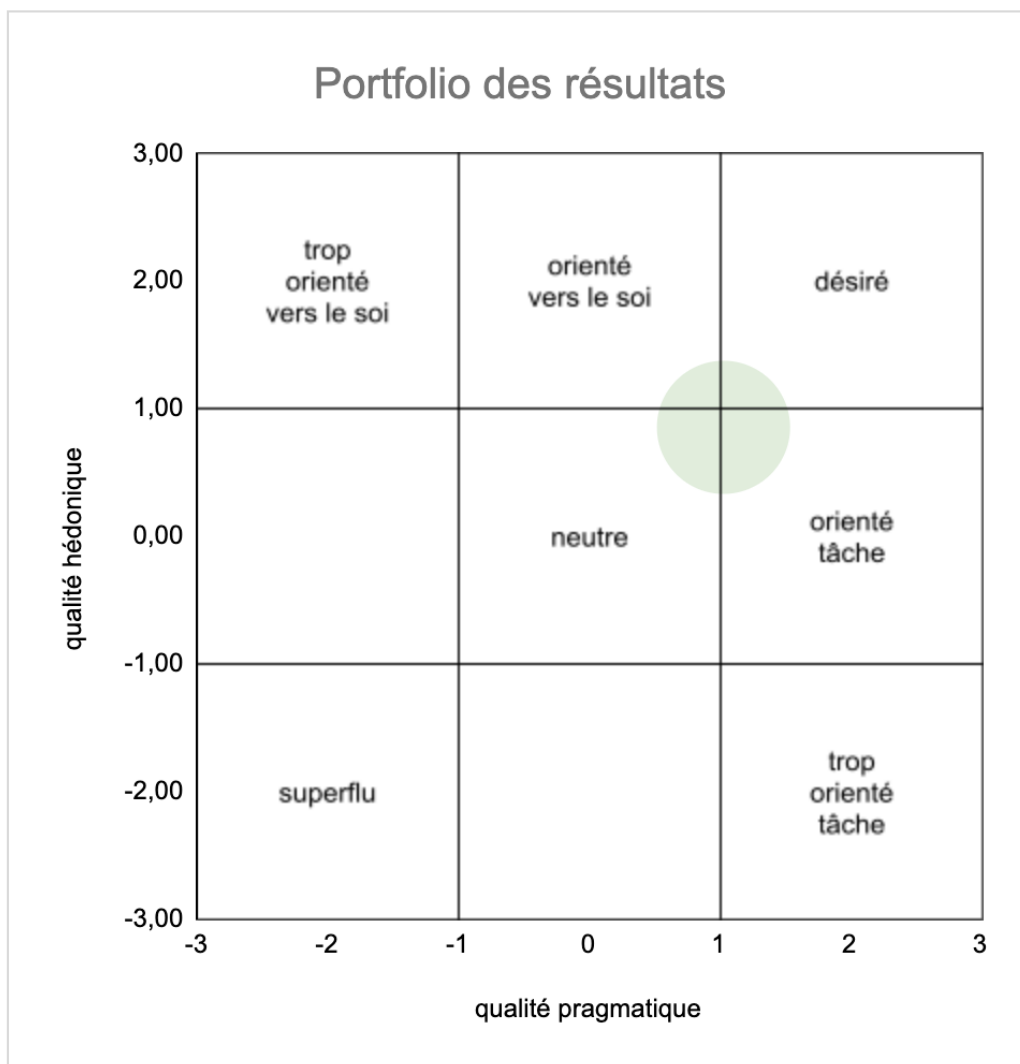
Attrakdiff word-pairs. Overall word-pairs give an overview of user experience with the serious game

Portofolio

With the Portofolio representation, Attrakdiff propose to classify systems into 9 quadrants, based on the two dimensions (1) pragmativism (is the system useful and usable ?) and (2) hedonism (do I have pleasure to use the system).

In the portofolio evaluation, PRITS is nearly in to reach the best quadrant. We consider that this is a quite good result for the first experimentation. We believe that adjustments both in game content and pedagogical implementation will enable to reach the "desired" quadrant in the further uses of the game.

Dimension	Valeur moyenne
Valeur moyenne à l'échelle pragmatique	1,04
Valeur moyenne aux échelles hédoniques	0,85



Attrakdiff : results Portofolio

References

Burkhardt, J.-M., Détienne, F., Hébert, A.-M., Perron, L., Safin, S., & Pierre, L. (2009). *An approach to assess the quality of collaboration in technology-mediated design situations*.

De Oliveira, D. C., Bielser, F., Bonnard, D., Songuel, Y., & Jaccard, D. (2021). A Serious Game for Patient' Rights Education. *2021 IEEE 9th International Conference on Serious Games and Applications for Health (SeGAH)*, 1–6. <https://doi.org/10.1109/SEGAH52098.2021.9551898>

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