CONTEXTUALIZATION
Catching up the first introduction paper of last year conference, we take the opportunity to reinforce the difference between three frequently mixed up concepts: “simulation”, “gamification” and “serious games”. The reason for this confusion could be that they often share the same domain of application or medium, and even, in some cases, overlap themselves. However they are distinct concepts, and it is therefore important to make distinctions between these different practices. We can note that “eLearning”, being a term that is relatively well defined and understood, is not further detailed here, as it was in last year paper.

THEME & OBJECTIVES
This short paper proposes definitions of the three concepts. It also highlights their limitations and where they could overlap. Examples representing their main characteristics are also illustrated in the figure.

Simulation is a representation of some behaviour or process based on real life phenomena. It finds application in fields like physics, biology or even economics and society. It aims to reproduce these phenomena with their consequences using corresponding scales and measurements based on well-defined units, e.g. distance, weight or time. Real-time (that can be 60Hz or a day per frame) is frequently the main factor allowing the simulation rhythm [1]. The medium is, in most of the case, computers with possible dedicated input or output device (lower-right part of the figure). The domain of application can be learning, evaluation, discovering or prediction.

Gamification is a recent term, and its origin makes debate; some say 2002, other 2008. It consists in adding game components to a non-game activity, e.g. score or achievements (lower-left part of the figure) in order to make it
more enticing and entertaining for its participants [2]. Providing measurable and comparative feedback on an activity will promote users’ motivation and engagement [3] without altering the activities nor the way they are performed. This definition shows a large domain of application, e.g. learning, data collection, health and many more. Even if this terms is mostly used in a context that involves software, it is not a requirement and can be applied to a more basic medium such as paper.

A **Serious Game** (SG) is a game (upper-right part of the figure) that have a serious primary purpose, instead of being only an entertainment product [4]. This aspect aims to train, search for or promote three possible cognitive levels: knowledge, skills or behaviours. It allows many different domains of application like learning, health and advertising. The term is usually used implying a software as a medium, but the concept allows various applications. SGs can be very similar to classic video games (which can strongly alter how we perceive the “serious” concept) or, on the contrary, have the appearance of a simulation software. Even if entertainment is not the primary purpose, an SG has to provide enjoyment like any other games and has to contain some game key components: rules, challenge, and interaction.

**COMMON FEATURES AND DIFFERENCES**

Here is a non-exhaustive list of properties that can help to define boundaries for each concept:
Gamification is the concept that requires the most user feedbacks as it is based on providing them using gaming elements. Gamification might also be seen as the less restrictive one, as the medium can easily be non-digital, allowing it to be applied to most of the existing tasks that would benefit from a greater user engagement. The use of game components is present into both Gamification and SG. The difference lies in how they are used: a gamification is a task to which they are added; an SG is a game conceived with a given purpose and may use them like any other game. An SG can be realistic or not, and if it is, the distinction with simulation can be hard. A simulation is based on reproducing real phenomena while an SG targets “serious” aspect such as learning and provide rules, challenge, and interaction. Finally, we see that these concepts can overlap and some products could be more than one of them.

A PRACTICAL EXAMPLE

It is not always easy to understand the difference, especially when searching the best development strategy. Here is a practical and simple example that might help concerning posture’s impacts on health at a desk:

› A simulation solution would allow the user to select between different desk configurations and see a projection based on probability of its future disorder;

› A gamified solution would be a record (automatic or manual) of user activity with a web platform showing him his computed score and achievements depending on how often he does short break or other criteria;

› A serious game application would be a game where the user’s progression is designed to make him learn how to behave. The interaction would allow him to make mistakes, but the rules would be designed so that a better behaviour would grant him a better success on the offered challenge.

REFERENCES


