Game Mechanics Supporting Pervasive Learning and Experience in Games, Serious Games, and Interactive & Social Media

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Abstract.

This workshop investigates the mechanisms for behaviour change and influence, focusing on the definition of requirements for pervasive gameplay and interaction mechanics, procedures, actions, mechanisms, systems, story, etc.) with the purpose of informing, educating, reflecting and raising awareness. By connecting various experts such as designers, educators, developers, evaluators and researchers from both industry and academia, this workshop aims to enable participants share, discuss and learn about existing relevant mechanisms for pervasive learning in a Serious Game (SG) context.

Research in SG, as a whole, faces two main challenges in understanding: the transition between the instructional design and actual game design implementation [1] and documenting an evidence-based mapping of game design patterns onto relevant pedagogical patterns [2]. From a practical perspective, this transition lacks methodology and requires a leap of faith from a prospective customer to the ability of a SG developer to deliver a game that will achieve the desired learning outcomes. This workshop aims to present and apply a preliminary exposition though a purpose-processing methodology to probe, from various SG design aspects, how SG design patterns map with pedagogical practices

1 Introduction

Government, commerce, marketing, health, energy efficiency and sustainability identify and use a wide range of non-digital information-based devices including policies and legislation when attempting to persuade, influence or change behaviour of the citizen or group of citizen, but are information, education or awareness sufficient, or are other techniques and devices needed?

Due to their immersive nature and engaging qualities, games, SGs, and interactive and social media have an important role to play in the way information is provided and change facilitated. Towards this, we have identified the following three main synergistic areas of focus for this workshop:

1. To learn, educate, inform and make aware.
2. To encourage reflection, contemplation and deliberation.
3. To determine pervasive mechanisms that influence behaviour change.

There are a number of existing games and game communities that address research aspects of these areas. Amongst them are Games for Change [1], Persuasive Games [2] and Alternate Reality Games [3].

Experiences that resonate or linger following an encounter (gameplay, interaction) have been shown to encourage reflection and potentially act as trigger for behaviour change [4]. Other examples that aim to address aspects of these areas come from Ian Bogost's game development company Persuasive Games who design games to represent arguments that aim to influence players to take action through gameplay [2]. However, there are still several gaps in order to understand exactly how Serious Game Mechanics (SGM) interacts with Learning Mechanics. An improved understanding of the relation would help in the design of better pervasive game mechanics.

The SGM approach

SGs represent a complex system of intertwined experiences influencing and motivating not only to play and engage with a proposed experience, but also to express and reflect on a gaming activity during and after experiencing it. In this context, game activities, various levels of SGM, motivational elements, competition, challenge etc. are all inter-related elements through which a gaming experience can be defined. Purposeful learning is in itself an aspect specific to SGs. The methodological approach towards identifying SGMs is a simple approach, which focuses on the nature of game mechanics associated with the specific aspect of purposeful learning [5].

All of these elements can be described in terms of Purpose, Process and Structure, in the sense that SGMs elements are designed for a reason and have a purpose connected to a gaming and learning experience [6, 7]. This purpose is generally achieved through a process in which activities, information or events represent the structural tangible elements of the overall element described (Figure 1).

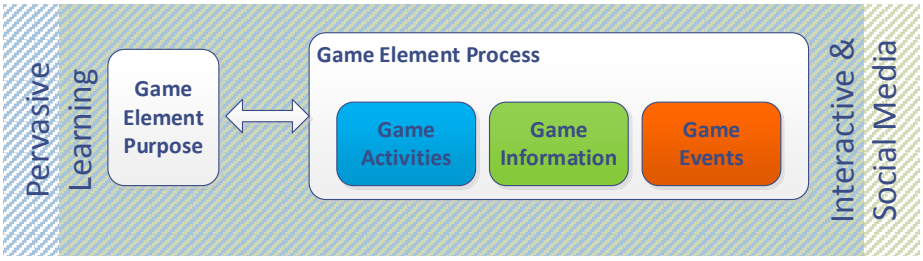


Figure 1 – Pervasive & Social SG element methodological approach.

Pervasive technologies open up new opportunities for game-enhanced learning experiences. However, providing adapted game experiences based on the learner location remains an open challenge. Context/ location identification represents a first stage in generating customized sequences of learning. Defining context/ location-sensitive, user-centred customization sequences are still subject to debate.

At the same time, socially intense virtual experiments are powerful tools to engage learners. It is equally important to consider not only their potential to stimulate learners, but also to annoy them. Maintaining a balanced stimulus based on Social Media is a key ingredient in achieving success. Social networks should play a critical role in stimulating learning, it is important to achieve an in-depth understanding on how to balance the amount of information posted on social networks and how revealing the information is.

2 Objective

This workshop focuses on identifying and analyzing the criteria of design, development and assessment of pervasive, socially textured gaming methods and technologies (mechanics, procedures, actions, mechanisms, systems, story, etc.) [8, 9] that interactively inform and educate, develop skills, encourage reflection, raise awareness, and influence behaviour change.

Specific objectives include:

1) Identify opportunities and challenges associated with SG implemented in context-aware, socially intensive environments.

2) Analyse the transformation processes of SGM and of pedagogical constructs in pervasive and social contexts.

3) Validate the extension of the Purpose-Processing Methodology (PPSM) based on pervasive and social experiences.

4) Discuss the pedagogical implications of adaptive learning experiments.

In particular, we intend to discuss how the different aspects influence the SGM-LM interaction in pervasive and social contexts:

a) Mechanics/experience to inform or provide a message or argument.

b) Character and role-play to enact/become complicit in historical, social and perhaps difficult events/scenarios;

c) Techniques for embedding messages and arguments in interactive story;

d) Entertaining and non-entertaining gameplay/interaction;

e) Encourage reflection during and following an encounter (gameplay, interaction);

f) Blended approaches using technology and non-technology, & in-game and off-game approaches

g) Gamification – applying gaming characteristics to non-gaming activities;

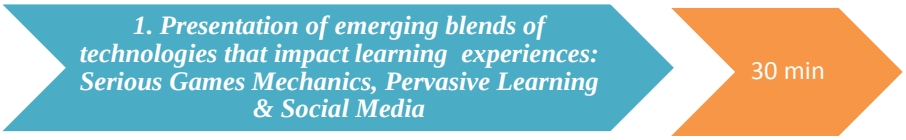
h) Motivating and sustaining behaviour change.

3 Target Participants

The workshop targets designers, developers, evaluators and researchers from both academia and industry involved in the topics above. In addition, we are interested in educators and participants with an interest in games, SGs, social media and on-line design, to share and discuss the issues presented above.

4 Workshop program

The proposed workshop will last half a day and will run as follow:



SGMs are seen as the relationship between pedagogical patterns and game design patterns [5]. The process of investigating the links between the two lies between the instructional design requirements and the actual game/game-play design. This 30 minutes session will provide a definition of SGM and suggest a purpose-processing methodology (PPSM) to identify the link. The extension of the methodology to incorporate Pervasive Learning and Social Media features is discussed and stimuli for reflection are provided.

The participants will experiment the presented methodological approach and framework. Participants will be divided into groups working with two different aims:

1) To analyze existing games from a pervasive and social perspective; and

2) To design new gameplays that take advantage of the benefits of pervasive and social contexts.

The organizers will provide a set of state of the art SGs to be played and analyzed.

This activity is based on the board game “cards against humanity”. The groups of participants will use the cards to sketch a pervasive, socially-driven SG integrating mechanisms that influence behaviour change. To stimulate creativity, participants will be handed blank cards, enabling them to integrate other mechanics than those provided by the organizers, such as those identified in the previous session and mechanics participants consider relevant.

Each SG that has been designed during this session will be presented and workshop participants will be able to rate the SGMs that they find most useful in a pervasive and social SG approach. The mechanics used will be analyzed and feedback will be collected in a matrix format that will specifically identify mechanics relevant in pervasive and social contexts.

Based upon the result of game play session, we will analyze, discuss and show how different aspects of the proposed methodological approach and framework can effectively support the design process, increasing the quality of the outcomes and decreasing the time to market. We will also discuss typical issues encountered during the design process, as well as challenges in finding the right SGMs for specific purposes.

5 Main outcomes

Participant will be invited to contribute to specific conference and journal papers based on the Pervasive & Social SG element methodological approach, reflecting findings and value-adding contributions to the field.

Acknowledgments

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