

Teaching project management in a virtual environment: The Virtual Scrum Simulator (ScrumSim)

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ABSTRACT

The Scrum Simulator (ScrumSim) is an interactive multiplayer VR simulation that places the participant in a virtual collaboration environment, in order to train them in the use of a project management methodology i.e., Scrum. In VR, the participants as a team, with the assistance of two avatars, perform intuitive tasks in sprints, cooperate, discuss, interact with the environment and receive feedback on their performance and tasks. The novelty of this approach lies not only in the unique design elements but also in the use of avatars and the utilisation of in-game data (task efficiency and communication).

CCS CONCEPTS

• Human-centered computing; • Interactive learning environments; • Collaborative learning; • Distance learning; • Virtual reality;

KEYWORDS

Scrum, Agile, Project Management, Immersive Technology

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1 INTRODUCTION

Agile project management tools and frameworks such as Scrum are on the rise, due the industry needs to manage project changes effectively, with a high degree of team and customer satisfaction

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[4]. For organization to transform towards agility, they invest in skilled/certified employees and training programs. These investments created a need for robust, reusable, training programs that are mainly materialized with physical workshops, tutorials, and certifications. With the affordance of cost-effective head mounted displays, this project explores whether Virtual Reality (VR) can become an innovative way to teach Scrum [2]. Yet, this is a new phenomenon, with unexplored issues such as the effectiveness of VR compared to traditional teaching paradigms, design considerations and technology challenges, assessment techniques, and perception of participants [3].

2 SCRUM SIMULATION EXPERIENCE

In our approach, following a co-design workshop relevant for such applications [1] and with the aid of users, Scrum experts, and educators the basic learning goals were set. Upon these goals and after several iterations of development, an interactive, multi-user training simulation was created. ScrumSim is designed to provide participants with a cooperating platform to perform simple intuitive tasks (Designing and furnishing an apartment). The environment contains two avatars holding the role of the Scrum Master and the Product Owner, which aid the participant with the task and describe Scrum related rules of the game (e.g., sequence, time, customer requirements etc.). Additionally, Scrum-related learning goals are integrated through direct and repeated exposure, such as the concept of time-boxed Sprints, or the existence of the Kanban board, changing requirements etc.

The simulation, as seen in Fig 1, has three sprints that function as iterations, the second sprint implying changes and additions to the work done in the first sprint and so forth. The team members cooperate, discuss, interact with the environment, and receive feedback on their performance and tasks, as seen in Fig 2. The communication time between the participants, as well as their interaction with the items (furniture) placed are tracked (as task efficiency) and utilized as data input for other parts of the simulation (i.e., data-driven retrospective).



Figure 1: - ScrumSim Structure

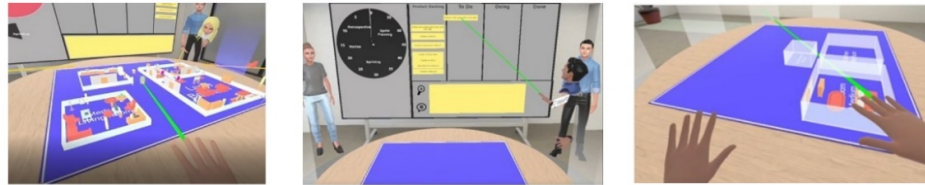


Figure 2: – Activity table, Kanban board, and participant's interaction

3 EVALUATION AND FUTURE STEPS

Currently, ScrumSim is a gamified simulation used to teach project management theories (Scrum methodology) in under and post-graduate students in the department of Business Development and Technology, at Aarhus University. Upon completion of the training, we ask participants a) Scrum specific questions and b) to fill a feedback form providing subjective metrics on immersion, presence, enjoyment, self-efficacy, and task load (Nasa-TLX). Initial indications portray a highly enjoyable experience, with relevant knowledge acquisition. Yet, more research is required to retrieve significant results on the impact of ScrumSim as an education tool. For example, a comparison between immersive and non-immersive

simulations (Desktop VR) may provide valuable indications on their applicability as educational tools.

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