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# Networked video games for older adults

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### ABSTRACT

We are witnessing an increasingly ageing society. Recently, there has been a growing interest in studying products or services marketed to older adults either by the scientific community or by enterprises. In the video game industry, the elderly, especially retirees, tend to become the next generation of avid consumers. Many recent studies have focused on the role of video games in maintaining and improving cognitive capacities. However, there is a lack of information about the use of networked video games in later age. No real attention has been paid to the collective component of video games and their power to promote digital inclusion and eradicate social barriers. The aim of this research is to understand the main game design components of networked video games that encourage older adults to play, using an applied social research methodology. Thus, two age groups (G1: individuals aged between 50 and 64 years and G2: individuals aged 65 and over) with higher levels of education have been involved in this study, aimed at understanding the tendency of the next generation of older adults as gamers. The study provides insight into a new video gamer profile by employing a survey questionnaire with 245 gamers aged 50 and over, two focus groups and content analysis techniques used to the proof of concept of a networked video game addressed to this audience. Findings indicate that there were no significant differences between a younger age group and older adults in their choices of video games played. Adventure games are preferred and problemsolving and memory span were the skills that participants liked to practise. Cognitive challenges are valued and collaboration between players should be prioritized over competition and combat. These data support the view that a new older adult's gamer profile is emerging and it will bring new challenges for game designers. The following research is supported by the SEDUCE project (Senior citizen use of computer-mediated communication and information in Web Ecologies), http://www.seduce.pt, PTDC/CCI-COM/111711/2009 approved by the Foundation for Science and Technology (FCT).

## INTRODUCTION

The elderly population is now becoming a generation of gamers and networked video games seem to have potential to promote interaction between players of this age group. In recent years, researchers [1, 2, 3, 4] have become interested in the effects of video games and how they can overcome some unavoidable constraints related to the ageing process, such as the reduction of cognitive functions. So far, these investigations have been confined to the cognitive and physical effects. However, social support promoted by video games hasn't been looked at yet. The ageing process may be defined as a global phenomenon [5] that is a result of better health options and living conditions, longer life expectancies [6] and decreasing birth rates [7]. This process often involves dealing with communication problems and social isolation [8]. Given that a high level of connectivity between players improve their social networks [9], video games with a multiplayer dimension (via the Internet, Intranet or shared games) would be of great value in the social lives of older adults. The purpose of this research is to understand the main game design components of networked video games that can encourage older adults to play. It also pretends to explore the potential of networked video games to promote new ways of having fun and provide social support.

2nd Stage - The design phase. Gamers and the researcher generate game-ideas and discuss game concepts. The participatory design sessions encompass brainstorming and scenario building (*Figure* 2).



#### Figure 2 - Participatory design session through focus groups

**3rd Stage - The proof of concept** is developed considering the game design literature and the results of quantitative and qualitative data (obtained from the focus groups and the survey). The main goal of this stage is to exemplify how data gathered from theoretical sources could be translated into practise (Figure 3).



49.5% prefer to play 43.1% as a team 7.4% for against the computer against another team Player vs Player Agree with... Disagree with...



#### *Figure 4* - Infographic (mode of playing)

There was also a correlation between the type of games preferred and the skills that participants wanted to practise. The respondents who preferred action/adventure games with problem solving elements tended to want to practise problem solving, creativity, spatial and temporal memory as well as calculation. This study has shown that accessibility issues were the most reported problems by respondents, followed by communication and technical problems. Slightly differences were also found regarding participants' gender and their difficulties. Whereas men reported having more problems related to technical aspects, women seemed to be concerned with visual graphics. Fast games are challenges for gamers with arthritic hands and nerve damage and thus video games should be stimulating through problem solving. These players seem to be motivated by the fun factor and the fact that they can maintain their mind active. Overall, the game design recommendations that can motivate these players to play may be: (a) Video games that promote problem-solving capacity and memory span; (b) Cognitive challenges; (c) Collaboration between players over competition activities; (d) Feedback messages, indicating their progress in game and congratulating them when the task is accomplished; (e) The option of customizing HUDs and keys; (f) Realistic graphics and a player versus environment mode; (g) The option of levelling by crafting instead of combating; (h) The sense of exploration and achievement and (i) Games with historical settings.

This research aims to understand the context of gamers aged 50 and over as well as to involve them in the design process of a networked video game. Thus, a mixed-method of quantitative and qualitative data was used. To answer the research question "What are the main game design components of networked video games, which could encourage older adults to play?" it was required a methodological framework from which we could examine their preferences and game routines. For this reason, an applied social research was conducted. This method was chosen because it prioritizes the practical application of the knowledge in a contemporary reality [10]. In addition, this applied social research encompasses three stages: (a) **The** expectations concering the proof of concept; (b) The design phase and (c) The proof of concept.

#### Video gaming when people are aged **50 and over**

**EMPIRICAL STUDIES** 

A new older adult gamer's profile is emerging

t will bring challenges for game developers in



Figure 3 - The Dead Sea Scrolls game (Proof of concept)

# RESULTS

This study set out to determine the main game design components of networked video games, which could encourage older adults to play. It then comprehends the types of video games preferred and participants' age group, their skills, modes of playing and older adults' difficulties with games' interfaces. Action oriented and violent games are not inviting to this target. They prefer in-game exploration and mental stimulus. As for multiplayer video games, this target group seem to prefer player versus environment to player versus player games. In-game achievements and exploration should be prioritized, as subjects emphasized that these game components provided a sense of control and power. The results have shown that only significant differences between two age groups (G1: individuals aged between 50 and 64 and G2: individuals aged 65 and over) were found when it comes to choosing action/adventure games and Memory games. The majority of video gamers in G1 preferred action/ adventure games and then strategy games. As for G2, strategy games were the first choice compared to action/adventure games (their second choice). It may suggest that as we get older and older, there is a change in preferences for cognitive challenges (strategy) over actions. Furthermore, the first group (G1) played more networked video games than G2. The results indicated that who participants lived with (whether accompanied, alone, in a residence for the elderly or in a residence for the care) did not affect the preferred playing mode (play against the computer, play as a team against another team or play against another player). The majority of respondents seem to prefer playing either alone or as a team against another team (*Figure* 4).

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#### *Figure 1* - Infographic (Sample)

1st Stage - The expectations concerning the proof of **concept** begin with the literature review process and an online survey of 245 gamers aged 50 and over (*Figure* 1). A netnographic method was also conducted in order to understand the importance of this study and know what society thought about playing games and video games in a later age.

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