Challenges for Pervasive Mobile Game Design: Examining Players' Emotional Responses

Laura Ermi & Frans Mäyrä
Hypermedia Laboratory
33014 University of Tampere, Finland
+358 215 {8077, 7933}

{laura.ermi, frans.mayra}@uta.fi

ABSTRACT

The research is focused on developing pervasive and persistent game concepts that are most suitable for contemporary mobile phones. The analysis of the emotional responses of the test-players in the first play-test and of the game prototype *The Songs of North* pointed at some key challenges to be met in order to successfully design pervasive mobile games that provide pleasant gameplay experiences: overcoming and exploiting the technical limitations and uncertainties, inventing means to ensure the sufficiency of meaningful tasks, and paying special attention to social playability and acceptance.

Categories and Subject Descriptors

K.8.0 [**Personal Computing**]: General---*Games.*

General Terms

Design, Experimentation, Human Factors, Measurement.

Keywords

Pervasive games, Mobile games, Emotional responses.

1. INTRODUCTION

The increasing amount of mobile phones has raised interest also in utilizing them for entertainment applications such as mobile games. The prevalent way has been to port old video games to mobile phones, but recently, research and development of new kinds of pervasive games has emerged. In those games, the players are provided with a gaming experience that is integrated to their physical surroundings and potentially accessible at any place and any time. Pervasive games can take advantage of positioning and thus make moving in the real world environment a central and meaningful game element. It has been suggested [2] that truly unleashing the potential of such games may require new kinds of end-user devices because contemporary mobile phones have inherited most of their characteristics from traditional telephones. Perhaps some day there may be radically different playing devices with sensors capturing information about players' context and location in order to create a gaming experience based on what they are doing or feeling. Our approach has nevertheless been somewhat different and focused on developing game concepts that are most suitable for contemporary kind of wireless and mobile terminals. This involves tapping their unique qualities such as communication possibilities, mobility and positioning. This approach, however, faces several challenges, and in this paper, we will briefly discuss the challenges revealed by examining the emotional responses of test-players while playing a prototype game.

2. THE GAME PROTOTYPE

The prototype game called *The Songs of North* was designed in connection with a scenario-based player study [4] that aimed at formulating general design requirements for pervasive mobile games. The game is a persistent multiplayer game that takes place in a semi-fantastic reality created on the basis of Finnish mythology. The player is given the role of a shaman, who is able to contact the spirit world through a shaman drum presented on her mobile phone. Thus, the spirit world is invisible, but players are able to hear sounds originating from there and see bones representing the spirit world on the skins of their drums. Players are able to act in the game world by drumming (selecting key combinations) and moving around in the physical world. [5]

3. THE PLAY-TEST

The first two-week play-test period addressing the question of gameplay experience was carried out after the prototype's first version was finished. The game was played on the original version of Nokia N-Gage. Out of 19 test-players 17 also responded to the questionnaire after the play-test. Three of them were female. The age of the players varied between 16–36 years, mean age being 24,5 years. All of the play-testers had some previous experience on digital games, but only few were familiar with persistent massively multiplayer games.

Majority of the data gathered during this first play-test aimed at future development of the game and its playability. However, the emotional responses that the game elicited provide also a basis for a more general conception on challenges of pervasive game design. The emotional responses of the players were measured by using similar self-report scales as in [6]. Altogether 11 of the players also attended to one of the three group interview sessions, where also their emotional experiences were discussed.

4. PLAYERS' EMOTIONAL RESPONSES

The average intensities of emotional experiences the players reported can be seen in Figure 1. When comparing these results to the experiences with traditional kinds of digital games *(Tetris, Super Monkey Ball 2, Monkey Bowling 2* and *James Bond 007:*

NightFire) [6], it is apparent that in general *The Songs of North* elicited less joy and more anger and depressed mood than those games. From the point-of-view of pervasive game design it is an important question to ask what were the elements behind these results.

The playing of the game required positioning information without which it was practically not possible to play. The players experienced technical problems related to this, but these problems did not strike all players equally: some players had none of them and some did have over 7 %, the average being 3 %. Actually, two players had error rates as high as 15–16 %, but they did not return the questionnaire and could not be included in the analysis. Figure 1 shows the emotional responses in two player groups that are formed on the basis of the positioning error rate. The most notable difference between the groups was found in the amount of anger experienced (Mann-Whitney U=16.0, p=.054).
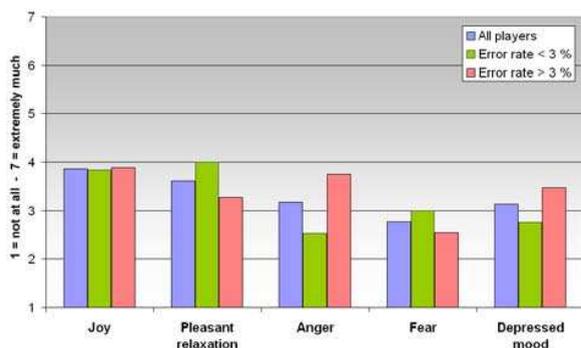
Figure 1. Emotional responses evaluated after the play-test, and depending on the amount of positioning errors encountered.

Also according to the interviews, anger was mainly related to the technical problems of the game. Malfunctions and disconnections caused frustration and annoy. Some reported that their aggressive feelings were related to the game device. The only thing in the actual game that elicited anger was a lottery mechanic that did not follow the probabilities. Even if depressed mood was mostly related to technical problems too, it had more links with the game mechanics. Dullness was elicited by the lack of interaction with the world and the relative small amount of tasks, quests and items. Fearfulness and nervousness were related to exiting events in the game and the potential to meet new people while playing. At the beginning of the game one player was also worried whether it would look stupid to walk around with the game device.

However, the amount of positioning errors did not seem to affect the experience of joy. Joy was particularly related to experiences of succeeding. Players reported that finding items and completing worthy tasks were important in this respect. Also the very first time a player observed another player being somewhere near her was an event that caused joyful feelings.

5. CHALLENGES OF PERVASIVE GAMES

The design of pervasive games face several challenges, especially on contemporary mobile devices. The playing device (i.e. mobile phone) is an integral part of the experience, but the designers do not have much control over it, and the devices are hardly ever optimal for playing. Besides the small screens and buttons characteristic for mobile devices, the implementation of sounds can be demanding [3]. Another important aspect of location-based games is their need for a network connection and positioning information. Since uncertainties are almost an inherent element in wireless devices, there is need for coping mechanisms and maybe even exploiting these uncertainties. From the player experience point-of-view, it would be interesting to compare for example what kind of impact do different kinds of uncertainty coping strategies [1] have on players' emotional responses. Persistence adds its own demands on game design: players feel frustrated if they do not have enough interaction possibilities and meaningful tasks to complete; so the game should provide them with opportunities to contribute to the content creation activities themselves. Finally, social playability and acceptability are important concerns in pervasive games that are often played in public places and in which it is possible to meet other players face-to-face. Based on our research, there is great potential in the innovative new forms of mobile multiplayer gaming, but research and development also need to come up with answers for multiple challenges. Our research will continue with developing and re-testing the prototype as well as the research methodologies.

6. ACKNOWLEDGMENTS

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