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Striving for balance: A look at gameplay requirements of massively multiplayer online role-playing games

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ABSTRACT

Engineering gameplay requirements is the most important task for game development organizations. Game industry discourse is concerned with continuous redesign of gameplay to enhance players' experience and boost game's appeal. However, accounts of gameplay requirements practices are rare. In responding to calls for more research into gameplay requirements engineering, we performed an exploratory study in the context of massively multiplayer online role-playing games (MMORPGs), from the perspective of practitioners involved in the field. Sixteen practitioners from three leading MMORPG-producing companies were interviewed and their gameplay requirements documents were reviewed. Interviewing and qualitative data analysis occurred in a cyclical process with results at each stage of the study informing decisions about data collection and analysis in the next.

The analysis revealed a process of striving to reach a balance among three perspectives of gameplay requirements: a process perspective, an artifact perspective and a player-designer relationship perspective. This balance-driven process is co-created by game developers and players, is endless within the MMORPG, and is happening both in-game and off-game. It heavily relies on 'paper-prototyping' and playtesting for the purpose of gameplay requirements validation. The study concludes with discussion on validity threats and on implications for requirements engineering research, practice and education.

1. Introduction

In the past ten years, companies producing massively multiplayer online role-playing games (MMORPGs), such as World of Warcraft, Lineage or EverQuest, have emerged as the fastest growing industry, generating worldwide revenue expected to reach 42 billion US$ by 2020 (DFC Intelligence 2016; De Heij, 2013). Essentially, such games are entertainment software system (of systems) providing 3D richly detailed online environments to millions of geographically distributed players to simultaneously participate in game communities and engage in social interaction and game activities, while exploring an unfriendly fantasy world. Vast and complex, MMORPGs result from long and expensive game design processes (DFC Intelligence 2016; De Heij, 2013). The focal point in such processes is the so-called 'gameplay' which is most generally regarded in MMORPG literature (e.g. Nardi, 2010) as to what players and non-player characters (NPCs) in the game do that is entertaining (also known as 'fun'). For example, the gameplay of Sony's MMORPG EverQuest is collaboratively planning and executing missions to defeat monsters. Gameplay as part of MMORPG design is a subject of both active debate in business and scholars' circles. Professional institutions such as the International Game Developers Organization (IGDA, www.igda.org), the Digital Game research Association (DiGra) and the Entertainment Software Association seek to establish 'good practice' standards to help define and analyze MMORPG gameplay. Similarly, empirical research scholars in the fields of game design (e.g. Fullerton, 2008; LeBlanc, 2006; Zagal and Bruckman, 2008; Bjoerk and Holopainen, 2005; Falstein, 2004), human-computer interaction (e.g. Deaker, 2012; Gross, 2012; Bergstroem, 2010), social behavior (e.g. Nardi, 2010), media communication (e.g. Ducheneaut, 2006), psychology (e.g. Brockmyer, 2009) and education (e.g. Dickey, 2011), have been actively investigating gameplay from the specific theoretical perspectives pertaining to their respective disciplines. Such studies investigated, among other topics, the aspects of gameplay critical to achieving MMORPG designs with mass appeal, the motivational factors concerning players' participation in MMORPG worlds, the MMORPG community-building patterns, and aspects of gameplay critical to human learning. Despite the wealth of gameplay-related research, gameplay only relatively recently became a topic of active research in the discipline of Requirements Engineering (RE) (e.g. Callele, 2005; Alves, 2007; Pasquale, 2013; Cooper, 2014; Kasurinen, 2014). Research on gameplay requirements is relatively rare and whatever empirical evidence it produced, it covered mostly design of standalone video games (e.g.

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Table 1
Related work on RE for games.

Publication	Type of game application	Is gameplay requirements explicitly discussed?
Callele (2005)	Video games	Mentioned only as part of RE for video games
Alves (2007)	Mobile phone games	Mentioned only as part of RE for mobile games
Djaouti et al. (2008)	Video games	Explicit treatment of gameplay requirements
Holopainen (2011)	Video games	Explicit treatment of gameplay requirements
Pasquale (2013)	Console-based games	Mentioned only as part of RE for console games
Cooper (2014)	Serious games	Mentioned only as part of RE for serious games
Kasurinen (2014)	Video games	Explicit treatment of gameplay requirements
Guiard et al. (2014)	Interactive computer games for children with autistic spectrum disorder	Mentioned as part of design processes for games; no discussion on gameplay requirements
Mueller et al. (2014)	Video games	Mentioned as part of design processes for video games; no discussion on gameplay requirements.
Östblad et al. (2014)	Audio-based adventure games for blind or sighted players	Mentioned as part of design processes for games; no discussion on gameplay requirements.
Quax et al. (2014)	MMORPGs	Mentioned as part of MMORPG classification; no discussion on gameplay requirements.
Paschali et al. (2014)	Various genres of computer games, incl. MMORPG	Mentioned only as part of engineering non-functional requirements related to enjoyment factor.
Callele et al. (2015)	Video games	Mentioned only as part of engineering experience requirements and testing those, for video games
Teruel et al. (2016)	Collaborative games, MMORPG included	Mentioned only as part of engineering game space awareness requirements, for collaborative players' games, including MORPG
Scacchi (2017)	Computer games in general	Mentioned only as part of RE for computer games.
Valente et al. (2017)	Mobile games	Mentioned only as part of engineering pervasiveness requirements, for mobile games

Callele, 2005; Pasquale, 2013), console-based (e.g. Cooper, 2014; Kasurinen, 2014) and mobile phone games (e.g. Alves, 2007; Kasurinen, 2014). While the authors of published research on RE for game systems (as the references in Table 1 in Section 2) had acknowledged the paramount importance of gameplay requirements, they also indicated a knowledge gap in our understanding of these requirements, and in turn called for further research in the area. Moreover, the 2017 paper of Stacchi indicates that knowledge of one type of games (e.g. mobile phone games) "does not subsume, contain or provide the gameplay experience in other games" and that "being skilled in development of for one type of games, e.g. MMORPG, does not imply ability or competence in developing software for another type of game, e.g. a continuous play twitch" ((Scacchi, 2017), p. 113). Understanding therefore the unique context of engineering gameplay requirements and the ways in which they are conceptualized is important to advance our knowledge in the field. The present research directly responds to these calls and extends the conversation on gameplay requirements to the realm of MMORPGs. To the best of our knowledge no empirical RE study has been published on the particular context of MMORPGs.

In order to get an in-depth understanding of how gameplay RE happens in real life, we executed an exploratory study (Yin, 2008) by involving practitioners that are professionally engaged in developing MMORPGs. Rather than investigating discrete aspects of the gameplay RE practice, our study sought a broader perspective on gameplay requirements and on the range of possible ways in which the practitioners reason about them and approach them in their projects. Sixteen practitioners from three leading MMORPG-developing and publishing companies have been interviewed and their gameplay requirements documents were reviewed in one-on-one walkthroughs with the researcher. Using qualitative data analysis techniques from the Constructive Grounded Theory (Charmaz, 2007), the study revealed how gameplay requirements have been reasoned about, from the perspectives of those working in the field. The key result of the study is a contextualized description of the practitioners views on gameplay requirements and on the ways they are coped with. The findings are compared with those from published relevant studies in the fields of human-computer interaction, social behavior, and psychology, and some implications are drawn for research and practice. We make the note that first results of the study have been presented at the 2014 international conference on Requirements Engineering (RE'14 (Daneva, 2014)). The present paper extends the 10-pages conference publication by providing new results in the form of new concepts that came out of our detailed data analysis, plus richer and deeper description of those concepts already mentioned in the 2014 paper. Next, in this paper we provide an in-depth analysis of related work by including empirical studies on RE for games, and systematic literature reviews published until May 15, 2017, which we use to evaluate our results in light of published findings of other authors. Third, we provide a detailed methodologically-grounded description of the choices behind our research design. Fourth, we extended discussion in depth and breadth (e.g. by including aspects such as theory-building, realism of generalizability claims among other topics).

As already indicated in Daneva (2014), our research on gameplay requirements for MMORPG extends previous empirical RE and empirical SE on game systems in several ways. First, we add to the body of empirical RE research on game systems by providing insights into one particular type of requirements (gameplay) in one specific context (MMORPGs) that so far is unaddressed in empirical RE literature, and from the perspective of practitioners working in that context. In this sense, our case study helps closing an existing gap of knowledge (Callele, 2005,2009; Alves, 2007;).

Second, the paper advances our understanding of gameplay requirements as functional requirements, which complements the earlier publications on games requirements (Callele, 2005) in which gameplay requirements were treated as quality requirements (or as also called 'non-functional requirements'). As we will see, the findings of our study could be possibly generalizable to other similar but different settings.

The paper also provides a direct response to the call of the empirical SE community for more empirical research on using SE processes in specific contexts (Sjøberg et al., 2007). The MMORPG requirements as artefacts and the RE processes for MMORPGs have largely been overlooked by empirical SE researchers, as it is evident from the systematic review of Ampatzoglou and Stamelos (2010). In the SE field, research about games has so far been constructionist in nature (e.g. the GAS series of workshop (Bell et al., 2012) at the ICSE conference), meaning that considerable efforts