

Chapter 8.10

Adaptive Narration in Multiplayer Ubiquitous Games

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ABSTRACT

The goal of this research is to develop new game-plays and new narration principles for MUGs (Multiplayer Ubiquitous Games). We aim to formalize a narrative mechanism to generate events which can stimulate the user's physical actions with the real world, and social communications with other players. We first present a pattern to identify the feedback relationship between the real world and the virtual world. We then analyze the notion of narration in games and the notion of user's model in information technology. Based on this analysis, a narration adaptive to the user's profile in considering the real world context is proposed. The last part of the paper is devoted to an experimental game MugNSRC developed through of the preceding principles. A prototype of this game has been developed using off the shell services available on geolocalized mobile

phones.[Article copies are available for purchase from InfoSci-on-Demand.com]

INTRODUCTION

An increasing complexity of relationships between the real world and the virtual world is arising in the next generation games (Bjork et al. 2002). The new types of interaction experimented in Massively Multiplayer Online Games (MMOG) like “World of Warcraft” (Blizzard, 2004), geolocalized games like “Botfighter2” (AliveMobile, 2000) or “Mogi” (Newtgame, 2003), Mixed Reality games like “Age Invaders” (Khoo & Cheok, 2006) or relying on the real time political events of the real world like “Geo-Political Simulator” (Eversim, 2004) and Internet and mail based adventure games like “In Memoriam” (Lexis Numérique, 2003) have one or several of the following properties:

- Pervasive: the game interacts with the player's life at uncontrolled times through email and phone calls, for example.
- Social: the game leads to social interactions between the players and more generally between people.
- Ubiquitous: The game relies on a ubiquitous computer system using all of the daily objects as interface and is aware of the user's context and needs.
- Mobile: the gameplay relies on the player's physical mobility.

There is no general analysis of the type of entertainment which relies on mixed reality interactive media and, of course, no underlying narrative theory. In this paper, we present a method to develop Multiplayer Ubiquitous Games (MUG). Our goal is to define a model of mixed reality interactive narration which is able to:

- Define the global principle of the game: goal of the game, why the user is interested to play and what type of interactions are involved.
- Define the ludic and narrative principles, the objects in the real and the virtual worlds and their semantic relations, and the user model.
- Define the learning process of the user model and the decision process of the ludo-narrative system.

The research project relies on four steps presented in this paper. The first step is to classify and clarify some concepts used in the analysis of the possible interaction between Virtual Worlds (VW) and Real Worlds (RW) for entertainment applications. In the first section we recall a general model of the relationship between RW and VW and state a terminology. It leads to a classification of applications and seven criteria with their definitions and possible values. The second step is

to specify a relation scheme between the information related to the player behaviour and possible narration schemes. According to the information available, we consider three possible levels of the user model: generic, localized and personalized. Considering the model of the user as a key element of the game system, we propose three types of narration scheme: global, context-oriented and character-based. In the third step we defined a model of the user, implemented in the game, which allows an adaptive driving of the game evolution according to the user's preferences. The functional architecture of this feedback loop between the RW and the VW is presented. The last step is to validate our approach through an experimental MUG game. We present the pitch of this game whose development is in progress.

REAL AND VIRTUAL WORLDS

Basic Concepts

In this section we will define the main components of mixed reality ubiquitous systems we are dealing with. In the RW there are one or several people who know that their actions may interact with the VW. We will call these people the users of the system. This means that the user has a representation in the virtual world whose behavior is perceptible to him. The identification of a user in the virtual space is known as "avatar", which is an anonymous and dynamic character put in charge to explore the VW, and sometimes may be partly autonomous without control of the user.

The part of the RW which is concerned by this study is the user's physical environment when he is involved in the dedicated applications. It contains all of the contextual information needed to interpret the meaning of the virtual world within the user's physical and social context. We consider three kinds of real objects able to interact with the system:

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