STRATEGATIONS - GAME BASED GAME MANIPULATION IN REAL TIME STRATEGY GAMES

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ABSTRACT

Real time strategy games have become very popular over the last years. Games like StarCraft or Warcraft are very successful on the desktop market. In a real time strategy game the player needs to defeat his opponents by using resources and units. By doing so the user is constraint by an economical model that was created by the developer. For example the player cannot create new resource types or unit types and cannot change the model by itself. In this paper we present an approach where the player can manipulate this game model in order to create new resource types or unit types in a game based way. Our approach enables new and creative possible game strategies for the player. We present the model and also an evaluation of the approach in this paper. We focus mainly on the mobile market in our approach but it can also be used for other platforms.

KEYWORDS

Game manipulation, real time strategy games, manipulation based games

1. INTRODUCTION

Real time strategy games have become very popular over the last years. In most real time strategy games the player has to build a base and collect resources in order to train units. The units can be controlled by the player and are used to attack the opponent units or buildings in order to defeat the opponent. Most real time strategy games encapsulate a fictional micro economical model e.g. resources are necessary to train units or construct buildings. The player needs economical and strategically skills to win a battle or a whole match. In most games the player can upgrade his units and buildings to strengthen them or to reduce costs. Usually there is neither the possibility to generate new customized units that have an economical impact on the game nor the possibility to use existing resources in order to generate new ones. This circumstance restricts and reduces the creative process that is required for winning a game. We will focus mainly on mobile platforms because in the last years it becomes an emergent market for manipulation-based games.
The contribution of this paper is threefold. First we provide a solution to manipulate game elements in real time strategy games in order to create an innovative and promising new game type. We will also present a detailed description of the calculations concerning this model. Finally we will evaluate our result in a qualitative user study.

2. REAL TIME STRATEGY GAMES AND GAME MANIPULATION

The history of real time strategy dates back to time when developers began to port round based board games such as risk or chess onto the computer and the computer performance was capable to react not only by round but also in real time. For a comparison between traditional games and videogames we refer to (Ó. Pérez-Latorre, 2012). Herzog Zwei was released in 1989 on the Sega Mega Drive and it can be considered as the first real time strategy game. In Herzog Zwei the player had to train units in order to destroy the opponents home base. Yet the major breakthrough for the genre came with Dune 2: The Building of a Dynasty a game from Westwood Studios. Dune 2 introduced the now common user interface for real time strategy games e.g. the selection of units via mouse click and starting an attack by a following mouse click on enemy units. Blizzard

Entertainment and other game company released the famous real time strategy game Warcraft: Orcs & Humans between Dune 2 and Command & Conquer. Because of the success of Warcraft, Blizzard developed and released StarCraft in 1998, which became a huge success for Blizzard. But in real time strategy games there is no possibility to manipulate game elements or to create new game elements. We therefore used our previous work on the field of serious games (Ismailović, 2012) and game manipulation (Haladjian & Ismailović & Köhler & Brügge, 2012) in order to integrate game based game manipulation to real time strategy games. We also used the work of J. Dormans (2012) on emergent gameplay. He gives some interesting insights in emergent gameplay and proposes the machinations model that can be used to describe games in a specialized Meta language. For our implantation we used some insights from the ORTS Engine (Buro & Furtak, 2004).

3. GAME OBJECT MANIPULATIONS IN STRATEGY GAMES

As already mentioned in most real time strategy games the player needs to gather resources in order to construct buildings or train units. In most cases the units are trained in buildings and the player needs some amount of resources to train a unit. In our propose units are also trained in buildings but according to blue prints. The player can customize the blue prints in a GUI separated from the game main view by attaching resources to it. A resource attached to a blue print can change the attributes of a unit trained according to this blue print. For example a resource can increase a units damage or armor. The amount of the increased unit attribute is also specified by the resource. Finally if a unit is trained then it costs the resource attached to the blue print.
There is also a possibility to generate new resource types. Resources can be natural resources that can be collected in sources similar to common strategy games like Warcraft but they can also be produced in special resource factories. A similar concept was already used in games like Anno 1602 where the player can use resources like iron to produce weapons that can be used to train special units. But in our approach the player can even customize the resources. The resources can be specified in resource recipes in order to produce it in a building. The resource recipe is also created in a separated GUI by simple drag and drop actions that can be easily handled from a mobile device. This allows us to take advantage of common ui on mobile devices. A combined resource produced according to a resource recipe inherits his attribute from his parent resources specified in the resource recipe.

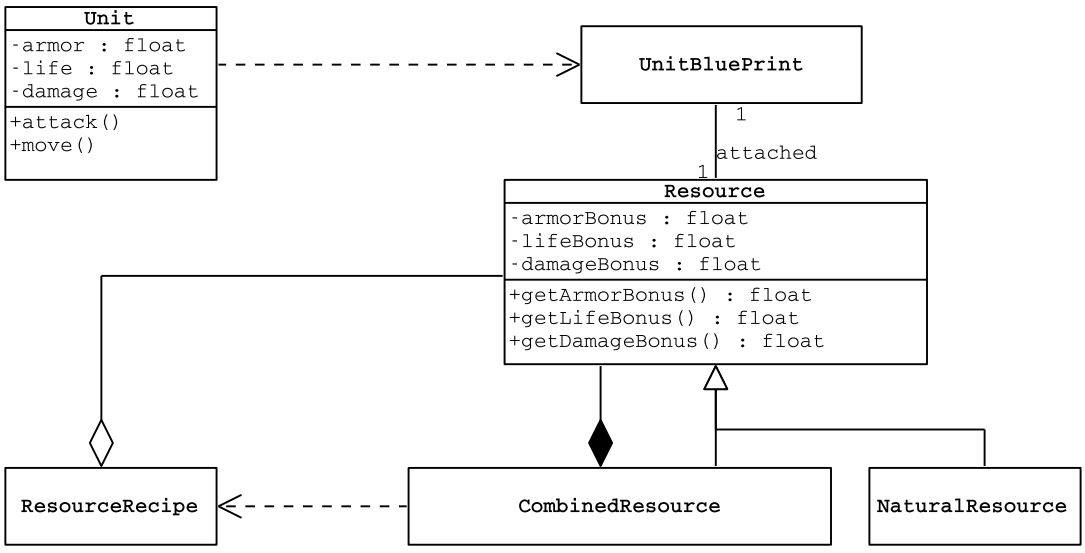

Figure 3.1 Resource and BluePrint model

4.2 Resource Attribute Calculation

When a resource recipe specifies a new resource then also the bonus attributes of the resource have to be calculated. We will demonstrate the calculation for the armor bonus attribute in the following. Before we can calculate the armor bonus the coefficient cf for each resource type r contained in the combined resource c hast to be calculated. The coefficient is the ratio of all resources contained in c and the amount a_r of a single resource type r contained in c. R is the set of all resource types contained in c.

$$cf_r = \frac{a_r}{\sum_{i \in R} a_i}$$

With cf_r we can now finally calculate the armor bonus c_{armor}.

$$c_{armor} = \sum_{r \in R} cf_r \cdot r_{armor} \cdot los$$

The los variable is needed to balance the combined resource. For example if a resource was combined then only a fraction of the bonus will be used. The calculation process is repeated for every resource attribute and can then be finally added to the unit blue print basic attributes. This allows the player to easily customize his own units and to generate new resource types.

4. EVALUATION

The main goal of the evaluation was to determine if the player would enjoy the new game concept, how interesting they are to him in the new concepts and how the user will accept the new concepts. To achieve this we have decided to conduct a qualitative usability study.

4.1 Method

In the course of our study we have conducted informal interviews with eight players. We have divided them in two different groups with five players in the first group and three players in the second group. In the first group the players are use to play strategy games. In the second group they are new to strategy games. All players have played a very simple scenario match in single player before answering our questions. While playing the match the players have provided us with useful feedback.

4.2 Results

We found out that the second group had many problems with the user interface and it was hard for them to find out the goal to win the game. For example at the beginning it is not obvious to them that they must build a barrack in order to train new soldiers, yet the players quickly learn how to create new resources. From the first group we got the most feedback. They had problems with the user interface on the research board where new unit blue prints or resource recipes can be created therefore we made a prototype with an enhanced user interface especially for the resource and unit blue print creation processes. At the end of the game session we asked them how they liked playing the game and how they liked the new concept of creating game elements during the game. Finally three main results where concluded from this study: Players are very interested in the concept of creating game elements in a real time strategy game and they can easily adapt the new concepts. They are very thankful to innovative ideas in the area of real time strategy games and most importantly they enjoyed playing the game.

4.3 Validity

The concept of game based game manipulation in a real time strategy can be considered a success because the players liked playing the game and they especially liked the innovative spirit of this concept. Our work is centered on real time strategy games: While we did not focus on this type of game itself we rather concentrated on the new ideas of game based game manipulation in this game type. Instead of focusing on improving the technological concepts concerning the development of real time strategy, we used already existing technology. Finally the study is only representative for the new concept and ideas not the game itself. For the game itself large studies with a great number of participants have to be done especially for the multiplayer mode.

5. CONCLUSION

In this paper we showed that a combination of real time strategy games with game based game manipulation leads to an innovative and promising solution. We presented a possible solution for manipulating the game mechanics of real time strategy games. We implemented the manipulation of the game elements in a suitable way for mobile platforms. The calculation model we have proposed for the generation of game element can also be used in other game types such as role-playing games or other strategy games. For the future we will continue with developing the concept and adding new features. Firstly we want to conduct bigger multiplayer testing in order to optimize and balance the game. Secondly we will port the game to other mobile platforms and do further testing. Thirdly we will make an attempt to implement a new real time strategy game user especially for mobile platforms. This approach may allow us to get closer to an innovative user interface especially designed for mobile platforms. Finally we will refine and improve the game element generation process in real time strategy games because we believe that this game type can be a major success on the mobile market.

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