

Reading the Game: *Game Simulation* Development Book Review

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BOOK INFORMATION



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The game industry is one of the most dynamic and fast emerging as one of the most lucrative business venture in the market today. However, taking a leap into the business is highly risky and the career pathway can be competitive to many entry level graduates and professionals alike. The *Game Development Essentials* series has produced books on the gaming industry covering topics like creating story and characters, gameplay mechanics to game project management. A newly published book in the series titled *Game Simulation Development* which promises to describe the foundation of many electronic games in the market today. In that order, the authors have prompted readers with questions of "How...?" and "Where ...?" game simulations can be found apart from the obvious application in the entertainment industry.

William Muehl is a Senior Producer at Midway's where he facilitates the development of globally shared technology, art and design initiatives across six studios and multiple game teams. Apart from that, he is also the Development Director for the creative department for Midway on titles like *John Woo Presents: Strangehold*, *Mortal kombat: Armageddon* and *NBA Ballers*. Jeannie Novak is the founder of *Indiespace*, one of the first companies that promote and distribute interactive entertainment online. In addition

to that, she is also a lead author and series editor of the *Game Development Essentials* series and co-author to another three books on interactive entertainment.

The book is organized into three parts: **Background and Market, Serious Games and, Entertainment and the Future**. Part 1 consists of two chapters covering the history and the main audience of simulation. In the next part, there are three chapters dedicated to Serious Games and the applications of game simulations in education, business training and military. Lastly, Part 3 discusses the entertainment industry is benefitting from game simulation and its future direction.

Each chapter opens with a brief introduction and a list of key questions as its learning objectives, which is very helpful in gaining the overview of the topic. The language used to explain the content is easily understood and bullet points are used to highlight important points. Explicit headings are used to chunk information into manageable paragraphs and provide visual organization. The graphics and charts are well illustrated with vivid colors and suitably exemplify the text contents, and where possible real-world game examples are included.

Another good pedagogy is a boxed feature in relevant chapters giving professionals game developers or practitioners' insights into the game industry, game development best practices and tips. Similarly, case studies of specific game simulations titles are presented to understand the design challenges and justifications such as *9/11 Survivor* (p33), *Darwinian Simulation* (p65), and *Battlefiled 2* (p105) to name a few.

In addition to that, self-assessment questions at the end of each chapter to measure understanding while a list of resources at the end of the book can be useful for further research and reading. Where suitable, each chapter highlights experts in the game simulation business providing their profile and experiences. Its companion DVD contains learning materials with working versions of *Torque* and *GameMaker* engines, modeling software, samples of game design document, articles, concept art and game demos to get a real feel on the genre.

Chapter 1 shows the evolution of game simulation is synonymous with innovation in audio, graphics and artificial intelligence technologies. Since one of the main goals is to improve users gaming experience, an increase in users' expectations leads to an escalation of complexity in game production. Depending on the budget, expectations and scope, production techniques follow the development environment. The next chapter provides an interesting observation on game simulation progression from purely entertaining towards educational elements in the realm of academic research, corporate training, political and social segment, marketing and consumer advertising. This highlights the adaptable and flexible nature of simulation applications.

These subsequent chapters concentrate on Serious Games, an emerging game genre which propose games for education or behavioral change in its users. Chapter 3 goes on to illustrate how mass market games like *SimCity*, *The Oregon Trail* and *Where is Carmen Sandiego?* are used in a classroom setting. An article in *Social Education*, the official journal of National Council for Social Studies proposes three instructional strategies to help teachers adopt games in the classroom. Teachers are encourage to combine the game and classroom activities into students' groups and guide them in cooperative and yet competitive play. Next, the game can be integrated into multiple disciplines in the curriculum including mathematics, language arts, music, values, research skills and group dynamics. Lastly, develop isolated lessons by using the game's

maps, screens, pictures and clues to teach geography, problem-solving, decision-making and data analysis.

Other benefits of using game simulation in teaching and learning is the possibility of cultivate the spirit of competition, responsibility and improve distance learning delivery. Traditional individual such as filling out a multiplication table with less than three errors, and group challenges like take a spot in the science fair may be replaced by a non-physical competitive activities through the use of game simulations. *Brain Age* is an example of a game simulation developed for teaching arithmetic skills. The game made the tasks friendly yet difficult enough for students to enjoy using it. Another good design incorporated into the game is the possibility to be used in a group setting and they can post their answers in a group forum. One of the major hindrances to large scale adoption of games in classrooms is the funding to bear the costs.

Responsibility is another behavioral change that can be fostered using virtual pets game simulations. In this type of games, pet simulations show realistic behavior and can respond through its advance artificial intelligence programming. One of the best selling games in this genre is *Nintendogs*. The pet dogs can sit, follow, lie down, and show signs of tiredness if trained too long and will be healthier if taken care of well as any real pet dogs would. A multiplayer-online game environment allows a large number of players to contribute and communicate within a learning setting. It has three important features that stimulate learning: *Constructivism, Social Interaction and Simulation*. A virtual campus not only permits a professor to post lecture notes online but also lectures in a virtual classroom. A case study on how *Second Life* is being used in universities such as Harvard Law School, is also presented.

An important feature of game simulation is the capability to monitor a student's progress electronically and automatically. Its system can record a student's scores over a certain period of time and can be organized by a range of variables – score, time, student and date. This allow a teacher to track performance in a collective or individually. Difficulty levels in learning are also another point crucial in learning development. Designers may need to look into the need of developing a training level for first time players or a guided tutorial. Despite its numerous benefits, game simulation is still being challenged by four factors: *Funding, Marketing, Politics and (Negative) Stigma*. In Education Week, game company executives are reluctant to invest in educational game titles because it is high risk. Apart from that, the strict educational system and lack of marketing has impeded its growth in the market.

In chapter 4, games simulation applications are used in the field of corporate training to simulate business environment including induction training, medical simulations and training, crime scenarios and advertising. An important element during simulation development is to include cross-discipline experts, close collaboration between businesses and developers and lastly good project management practices. The authors proceed with notable examples of simulation applications in each of ensuing area. In medicine and healthcare, *Operation*, a 1965 board game progresses into *Trauma Center* which immerses players into a variety of medical emergencies. Another game called *Re-mission* was released in 2006 to help improve the health of cancer patients and an exemplary model of cooperation between medical specialists and game developers.

Simulations may also be used in a courtroom to determine the fate of a defendant based on the accuracy of the evidence presented. *EDSMAC2D, CrimeZone and Phoenix Wright* are examples of simulations used to recreate traffic accident, homicide and courtroom scenarios. Advertising has a long and lucrative withstanding relationship with the game

industry. With dynamic in-game advertising, companies know that players are using the products rather than just viewing the logo. For example, Coca-cola vending machines dispense beverages to rehydrate a virtual character or athletic shoes increase the performance of a virtual athlete. A major part of modern armory collection and training is game simulations like *Incident Commander* by BreakAway Ltd., designed to be used as both a stand-alone simulation and multiplayer environment where up to 16 players dispersed geographically can coordinate a response to the same incident.

In other commercial areas, game simulations are also used to promote work efficiency, automobile manufacturing, simulating optimum shipping methods and routes; advance flight simulators for pilot certification scenarios, improving safety and efficiency of practices in dangerous industry like mining, improving agriculture yields and weather forecasting.

In the last chapter of Part 2, military uses of game simulations are explained in detail. Imagine trying to re-create a battle scenario repeatedly to train soldiers, the costs will be exorbitant with high risk of injuries, damage to the environments and longer time frame between preparations and implementation. Game simulations in combat training help reduce these stumbling blocks, increased the effectiveness of simulations and creating numerous scenarios which in the past might be impossible with field-simulations. Other imperative reasons that strengthen the use of simulations in armed forces exercises are discoveries of new strategies or behaviors through the complex model, cross-cultural training, to avoid protests and lawsuits resulting from field-training and non-combative simulations like rioting, looting, mass demonstrations and civil war. Many factors contribute to effective military simulations including the difference expectations between a military and consumer audience. For soldiers, a highly accurate model that replicates the military procedures and protocols help prepare soldiers for the unpredictable realities in the battlefield. However, as shown in *America's Army*, which was released to the consumers in 2002, gave a glimpse into the life of a U.S. soldier, while avoiding blood, dismemberment and the psychological effects of war.

The game immersive experience encompasses narrative storylines, a series of challenges involving conflicts with the enemy, battlefield environment, accurately modeled weaponry, interesting and unique characters, and their transportation. As in any games, rewards are very important and similarly military simulations include both tangible and intangible incentives such as rank, new weapons, abilities or unlocked areas allow the player to proceed to the next mission. An artificial intelligence support during a mission needs to mimic behavior expected of humans and able to monitor their own status. An online mode in game simulations is compulsory to coordinate remote mission and to prepare for nonconformist or unpredictable behavior of human soldier in the battlefield.

Chapter 6 will "...convince players that they are capable of managing a football team all the way to the Super Bowl, taking the lead on the last lap of the Daytona 500 or hitting the clutch three pointers to win the NCAA playoff game". This precisely describes the best of sports simulation games and its most important element-- *immersiveness*. In this category, the increasing complexity of professional sports had spurred an increase in popularity, budgets and technological capabilities of sports simulation. *Madden NFL07* is one of the complex sports game simulation that contains hundreds scenarios and options to control the virtual footballers that emulate their real-life counterpart with countless numbers of button press combinations. This application and some like it allows a coach to design a new play and test it against a variety of opposing strategies. Among the common feature of sports game simulation are the capabilities to manage individual

athletes and its corresponding team, lifelike sporting stadiums, arenas and tracks, accurate representation of the player models and their movement, spectators' animation, and games controls to reflect the different types of sports.

The subsequent chapter discusses important design considerations when developing for creative art tools using motion-sensing peripherals and rhythm-based music games components. *Electroplankton*, for Nintendo DS, is a music simulation favoring compositional experimentation in contrast to high scores, time limits and game objectives. Another example is *Wii Music: Orchestra* allows players to conduct a virtual orchestra using motion sensitive remote to simulate a conductor's baton. Some company release their own custom peripherals to enhance a players experience such as the Igiton Dance Pad 3.0 which is used with *Dance Dance Revolution* game. In contrast, Harmonix's *FreQuency* and *Amplitude* make use of PlayStation 2 controller buttons so players can synchronize their movement with the sequence of shapes floating down the game's tunnel. Other uses of real-time game engines include producing films or *machinimas* like *Red vs Blue* on the *Halo* engine. A popular machinima toolbox called *The Movies* takes its players to 1920s Hollywood movie mogul in control of a studio, actors and film production. It is a very powerful simulation that thrust players in the experience of producing a film from the beginning. A noteworthy simulation titled *Killer 7* by Shinji Mikami, takes its players inside the mind of a psychologically disturbed man with multiple personality disorder and each personality has its own distinction when killing. Its cinematic presentation helps simulate the chaotic and disorienting effects of multiple personality disorder combined with a threatening storyline.

In Chapter 8, the concept of Sandbox simulations or open-ended scenarios with no "end", give players a wide-open and highly customizable environment. Players are encouraged to experiment with an array of tools, objects and relationships without any strict game objectives. *Grand Theft Auto III (GTA III)* "go anywhere, do anything" open-world experience caused shockwaves in games sales and simulation imitations similar to *GTA III*. The sandbox that started it all is *SimCity*, designed by Will Wright in the late 1980s and the following versions still maintain as one of the highest selling game simulations of all time. The highlight of the chapter is on Massively Multiplayer Online Games (MMOG) that brings players into a virtual world that simulates many social, economic and political aspects of real life. *EverQuest* and *World of Warcraft* uses similar customizable avatar system, dungeon-raid-based gameplay and a fantasy theme built on the premise of good versus evil. In a MMOG world, the character that a player chose "matures" after gaining experiences by mastering trades and defeating enemies and at the same time reaps benefits in real life through their socializing and exchange of views.

In the last chapter, the authors conclude with an outlook into the possibilities of a successful future for game simulations. Some areas of game simulation development include a fully immersive virtual reality, a library of shared components i.e. game assets, characters and animations; advancement in audio and graphic technologies, interfaces, simulation designs and academic degrees.

Game Simulation is highly recommended for students or any categories of interested readers to get a strong foundation on simulations in games before proceeding into more focused areas. The organization of the book is well structured and going through the content is easy and enjoyable. Although the supporting materials provided in the DVD is useful for practical exercises, it would have been better if there was a guided lab tutorial accompanying them and the assessment questions at the end of each chapter could be presented with more variety. Another feature that would be really helpful is to have a

list of references or reading list at the end of each chapter rather than at the end of the book.

In addition to the current content, additional information supporting the main text is appropriate and introduces some of the experts and their priceless thoughts. The language gently eases first time developers into the game world speak. The depth of coverage on *Serious Games* topic is highly commendable and very informative. It also opens up new areas of research and opportunities for further growth. Overall this is a good book to jump-start into the game simulation genre.