

Simulation and Game Development Software Engineering Technology

Game Development
Process

Prepared by Norbert Mika

Agenda

- Concept
- Principles of Game Design
- The Team
- Development
- Publication

Concept

● Game Genres

- Adventure – King's Quest
- Action – Halo
- Role-Play Games (RPG) – Final Fantasy
- Strategy –Command and Conquer
- Simulations –Flight Simulator
- Sports – NHL 07
- Fighting – Fight Night Round 3
- Casual – Wheel of Fortune
- God – The Sims
- Educational – Reader Rabbit
- Puzzle – The Incredible Machine
- Online - Everquest

Concept

- **Client Goals**
 - **Gameplay**
 - Overall experience
 - Player engagement
 - **Scope**
 - How big is it? (ie levels, creatures, weapons)
 - Development cost vs. retail price
 - **Technical Risk**
 - Existing or future technologies?

Concept

- Game Proposal Document
 - High Concept
 - Genre
 - Gameplay
 - Features
 - Setting
 - Story
 - Target Market
 - Target Platforms
 - Estimated schedule and Budget
 - Competitive Analysis
 - The Team

Principles of Game Design

- Player Empathy
 - Anticipate the player's moves and choices
 - Testing is important
- Feedback
 - Defines level of interactivity
 - Sound, graphics, tactile (ie force feedback)
- Grounding the Player
 - Let the player know where he/she stands in long, medium and short term

Principles of Game Design

- Moment-to-Moment Experience
 - Goal is to prevent the player from leaving the game
 - Verbs
 - Early shooters - *Move and shoot*
 - Modern RTS – *build, research, survey, try, move, talk, fight, buy, sell, etc.*
 - More verbs mean more variety

Principles of Game Design

- Moment-to-Moment Experience (cont)
 - Tips to avoid common experience-killing hazards:
 - Perform complex action once, provide shortcut the second time
 - If world is already explored, provide shortcuts to specific locations
 - Allow rendered transitions to be bypassed (Esc key)
 - Allow audio (or dialog) to be cut short
 - When restarting, allow by-pass to introduction
 - Don't require characters or other objects to be built from scratch – provide defaults and allow modification

Principles of Game Design

- Immersion
 - Make the game “a dream”
- Writing
 - Text and dialogue must be well written
- Design Within Limits
 - Cost, Schedule, Technical Feasibility

Principles of Game Design

- Remove Impediments
 - Avoid Disc Swapping
 - Reduce Load Times
 - Minimize Game Interruptions
 - Allow Game Saving
 - Provide good housekeeping (save/load, quit, options, help)
 - Be bug-free (both program and logic)

Principles of Game Design

- Interface Design

- “desperately simple”
- Vital information easy to find
- Controls must be clear
- Must be tested
- Follow conventions of the genre

“Design must convey the essence of a device’s operation...”

“The surest way to make something easy to use ... is to make it impossible to do otherwise – to constrain the choices.”

The Design of Everyday Things, Donald A. Norman

Principles of Game Design

- Start-Up Screen

- Cannot assume level of user – design for all
- Give option to:
 - Go right into the game
 - Load a saved game
 - Start tutorial or practice
 - Open options menu
 - Replay the opening movie (introduction)
 - By-pass the opening movie

Principles of Game Design

- Customizable Controls
 - Make everything as adjustable as possible
 - Monitor settings, volume, game controls, etc.
 - Different things are important to different players
 - Explain what each option does

Principles of Game Design

- Cheat codes
 - Include as many as you can, but acknowledge that they break the normal play
 - Let the player choose what makes the game fun – cheat codes enable this
 - Test the codes – may require other parameters to be set
 - Need to provide support

Principles of Game Design

- Tutorial or Practice mode
 - Some players need non-threatening atmosphere to “get feet wet”
 - Tomb Raider – provides practice in running, jumping and climbing – skills that are essential to the game
 - If a player doesn’t practice, but needs it, have a way to remind the player (like a character providing the instruction)

Principles of Game Design

- Structure and Progression
 - “A game should be easy to learn, but difficult to master.”
- Take Care of the Player
 - Help players get through the game, not hinder their success
- Dead Man Walking
 - Don't let the player continue if he can't win and doesn't know it
- Protect the Novice
 - Get the player hooked!
- Avoid the Need to Repeat Complex Sequences
 - Allow save, or create checkpoints to revert to

Principles of Game Design

- Give the player all the necessary info
 - Avoid the need to purchase strategy guides
- Reduce Player Paranoia
 - Give player small, incremental rewards
- Offer Levels of Difficulty
 - General levels and tweaking options
- Create an Integrated Whole
 - Iterate with the question, “For this interesting thing to be true, what else must be true?”

The Team

- Visionary
 - One person is keeper of the Vision
 - Needs a working understanding of the whole project
 - Traditionally known as champion or sponsor

The Team

- Producers
 - External – works for the publishing house to make sure the project is on track
 - Internal – manages the team
 - Project manager, project lead or director

The Team

- Design Team
 - Game Designer
 - Level Designer
 - Writer
 - Programmer
 - Rendering engine, AI, physics, tools, database, network, sound, weapons, interface, I/O, etc.

The Team

- Artists
 - Concept design
 - Character modeling
 - Animation
 - Background modeling (Textures)

The Team

- Test Team
 - Test Lead
 - Testers
 - Is it fun?
 - Is it easy to use?
 - Does it make sense?
 - Is it fun?
 - Does it work?

The Team

- Likely to be Outsourced:
 - Voice
 - Music
 - Sound Effects
 - Video
 - Motion Capture
 - Language Localization
 - User Manual
- Legal Issues need to be addressed

Development

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 - Competitive Analysis
 - The Team
 - Risk Analysis

Development

- Preproduction (Proof of Concept)
 - Game Design Document
 - Exhaustive details of game design
 - Art Production Plan
 - General artistic renderings & Production Plan
 - Technical Design Document
 - Implementation details including the tools used for development
 - Project Plan
 - Game Prototype

Development

- Development
 - Many approaches used
 - Traditional and Agile
 - Tips
 - Engage test lead early
 - Maintain good communications across the team
 - Track expenditures
 - Maintain team identity and spirit
 - Work cooperatively with marketing
 - Demos are like mini-projects – must work well
 - Be ready for change

Development

- Releases

- Alpha
 - Early feedback
 - Generate interest
- Beta
 - Test functions and features
- Code freeze
 - Scope is frozen, only performance improvements
- RTM (Release to Manufacture)

- Patches

- Bug Fixes

- Upgrades

- New versions
- Treated as entire projects with the same release versions

Publication

- Mainstream Games have as little as two weeks to prove it is a “best seller”
- Delivery to stores does not mean the game sells
 - Retailer can return games that don't sell
- Big publishers have an advantage since they can buffer the lackluster game sales
- Advanced demand generation is critical

Publication

- Publishing activities
 - Book time and resources for disc duplication and packaging
 - Marketing must buy media (magazines, web, TV, etc.)
 - Sales buys space in stores (end caps)
 - Public Relations (or Marketing) encourages coverage by editors and journalists

Publication

- Promotional Tools
 - Demo/Trial versions
 - Interviews with editors and journalists
 - Screenshots
 - Sell Sheets (Retailer information including product overview, marketing campaigns, co-op opportunities, etc.)

Publication

- Issues to address with developers
 - Advances
 - Royalties
 - Reserve against returns
 - Milestones and Deliverables
 - Rights
 - Proprietary Technology
 - Term of Agreement
 - Termination
 - Confidentiality
 - Ancillary Revenues

References

- Game Design (2nd Ed.), Bob Gates
- Appendix A of the above text contains a list of project documents and their contents.