

Computer Game Development

CIS 487/587

Bruce R. Maxim

UM-Dearborn

Adapted from John Laird's
EECS 494 notes

Development Stages

- Develop original concept
- Shop to publishers
- Create schedule (12-24 months)
- Deliver work as milestones (work products or completed activity)
- React to customer evaluation

Game Development is Unique

- Must be willing to rip out features that don't work
- Designers may create things customer never heard of before
- May require more research and experimentation than other software development
- Often more ideas than time to implement

Development Team Size

- In the 1980's might be single developer
- Most teams today have 10-60 people
- Programming is now a smaller part of the complete project than before (need good software engineering and media design work)

Example 1988

- 3 programmers
- 1 part-time artist
- 1 tester

Example 1995

- 6 programmers
- 1 artist
- 2 level designers
- 1 sound designer
- Contract musicians

Example 2002

- 2 producers
- 4 programmers
- 2 game designers
- 1 2D and texture artist
- 3 level designers
- 1 audio designer
- 4 animators
- QA lead and testers

Development Milestones: Development Timeline

- Here are some example development periods for different platforms:
 - 4-6 months for a high-end mobile game
 - 18-24 months for an original console game
 - 10-14 months for a license / port
 - 16-36 months for an original PC Game

The next series of slides
come from the
Rabin text

Concept Phase

- Where concepts come from
 - Sequels
 - Film licenses
 - Technology re-use
 - Occasionally, original concepts get greenlit
- Producing the conceptual design
- Green light

Pre-Production Phase

- GDD
- Team selection
- Internal staffing plan
 - Existing employees (same roles)
 - Promotions, transfers (new roles)
 - Hire new employees

External Development

- Selecting an external developer
 - Previously used developers
 - Referrals (producers, developers)
 - Non-Disclosure Agreement (NDA)
 - Bid package
 - Treatment or GDD to date
 - Publisher's expectations for product
 - Bid format and due date

The Development Agreement

- Developer's obligations
- Publisher's obligations
- IP ownership
- Warranties
- Termination
- Milestones

Milestones

- Highly detailed, specific
- Quantifiable, measurable
- Due dates
- Payment amounts (upon acceptance)
- Avoid terms like “alpha” and “beta” unless clearly defined
- Milestone approval cycles

The Technical Design Document

- Game Design Document is a statement of the problem
- Technical Design Document is a statement of the solution
- Foundation for the programming work
- Identify technical challenges
- Plan for technical solutions
- Set forth asset format guidelines

Scheduling

- Generate task lists from GDD & TDD
- Plan everything
 - Programming
 - Assets
 - Demos
 - Approvals
 - Green lights
 - Vacations, holidays
 - QA
- Work backwards from completion

Adjusting the Schedule

- Add people to reduce development time?
- Deliver assets on time
 - Don't make programmers wait for assets
- Prioritize feature set
 - Lower priority features to be done later if possible
- Look for bottlenecks
 - (feature-technology interdependencies)

Budgeting

- Personnel costs
 - Salary x time x involvement %
- Developer/Contractor payments
- Equipment & software
- Supplies
- Travel & meals
- Shipments

Profit & Loss Analysis (P&L)

- Costs
 - Production budget
 - Cost of goods (COGs)
 - Marketing
 - Licensor royalties
 - Developer royalties
- Revenues
 - Projected Sales
 - Wholesale price
 - Ancillary sales (OEM, strategy guides)

Kickoff Green Light

- Producer's plan for the project
 - GDD
 - TDD
 - Schedule
 - Budget
- Green light
 - Executives
 - IP owner (licensor)
 - Platform holder

Production Phase

- Programming now underway
- Kicking off tasks – art creation
 - Art lists
 - Art asset file naming conventions
 - Art asset tracking
 - Art asset approval cycles
 - Art asset delivery formats

Red Flag Spotting

- The usual causes of red flags:
 - Team conflicts
 - Personnel issues
 - Design problems
 - Money troubles
 - Technical glitches
 - Change requests
 - Schedule delays
- Take immediate action

Kicking Off Tasks - Audio

- Sound list
- Music specification
- Story text
- Voice-over script
- Creation of sounds
- Creation or licensing of music
- Recording of voice-overs

First Playable – Proof of Concept

- Keeping everyone on board
 - Licensor(s)
 - Platform holder(s)
 - Executives
 - The Team
- The Cerny method
- Keeping the momentum going

Working with Marketing

- Working title → final title
- Screen shots
- E3 demo
- Magazine demo
- Platform holder promo

Post-Production

- Personnel transfers
- Localizations
- ESRB rating
- Box & docs
- Strategy guide

Quality Assurance

- Test plan
- The QA database
- QA – the view from inside
- The QA-producer relationship
- Post mortem