# Applying classic game production principles to game productions with short development times

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**Abstract:** During the winter semester 2016 62 students of Media Informatics and Interactive Entertainment at the University of Applied Sciences Mittweida collaborated on developing a 3D Puzzle Platformer. Within a very limited timeframe of four months and with many people to manage the team could produce a title that successfully went through the Greenlight process of Steam. This paper discusses how classic game production principles can be successfully scaled down to fit a game production with relatively short production times by analysing the production of *Koa Bunga*.

**Keywords:** game development, short production times, project management

## 1.    Introduction

A commonly used model to show the constraints each project must face is the Project management triangle. It is a triangle with cost, scope and schedule as its sides and visualizes the connection between the three factors and the resulting customer satisfaction. [NG03]

This connection is also applicable to game development as those three factors must be managed and balanced by the team to deliver a satisfying product. The factors cannot be freely adjusted as a project should arrive in time, in budget and with a certain scope.

In the case of the development of *Koa Bunga* the time factor was set. *Koa Bunga* was developed during one semester by 62 students of Media Informatics and Interactive Entertainment, which meant that the production had to be finished in four months. On the other hand, the cost factor could be comparatively high as an unusually high number of people were working on the project.

Due to the unusual nature of the project the team was faced with some unique challenges. To achieve the scope and quality the team was aiming for the project's cost factor had to be carefully and creatively managed. The following text will attempt to showcase some of the methods and tricks used to successfully finish the development of *Koa Bunga*.

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## 2.    Classic Game-Production

This section shows how production phases and clear distribution of roles and responsibilities are used in a classic game-production. These principles are powerful tools used in *Koa Bunga*'s production to successfully manage the project.

### 2.1    Production phases

A game's production can be separated into three distinct phases: preproduction, production and postproduction.

Preproduction stands at the beginning of a game's lifecycle and is required to produce a solid production plan. Tasks during preproduction include defining and fleshing out a concept which is then written down in a so-called Game Design Document. The Game Design Documents details everything about the game like story, mechanics and User Interfaces and serves as the basis for the production plan [Ry99]. Also in preproduction, the game's concept is analysed to determine the projects risks and its budget. [Ch13]

A well-executed preproduction phase is critical for the success of the next step, the actual production phase, as the production plan which is created during Pre-Production should detail all the work necessary to finish the game. In practice, this plan is of course subject to change should the need arise during production. [Ch13]

Often the preproduction phase and the production phase cannot be clearly divided as some features might still be in preproduction while others can already be worked on [Ch13]. This is also reflected by the changing nature of the Game Design Document [Ry99].

During the production phase, the assets and code for the game are created, which is why the size of the involved team typically increases a lot during this phase. [Ed06]

For the production phase, it is common to work with milestone goals, agreed upon requirements the game must fulfil during certain times in production. These goals are used to track the project's progress and can include anything from certain features being implemented to broader goals like having a first playable version of the game. [Ch13]

Common major milestones are for example:

- Alpha: When reaching alpha, the game is generally considered feature-complete [Be03], which means that the game includes all major features. However, those features do not need to be final, yet as there might still arise the need for major adjustments during the rest of production [Ch13].
- Beta: Beta is the milestone at which the game's assets are finished and all major bugs are taken care of [BN09]. The main tasks of the team after reaching beta are to polish the game [BN09] and fix the last bugs [Ch13].

- Gold master: The gold master milestone marks the end of the production phase as at this point the game is considered ready for launch [BN09]. The Gold Master version should be polished and bug free, which in practice is seldom the case as some very specific bugs that could not be tested for might arise only when the masses of players get their hands on the game.

After the game's official release there is still work left to do. To get the most out of the production as a learning experience the team should conduct a post-mortem analysis. This helps the team to review and reflect the development of the game which will most likely result in gaining and retaining valuable knowledge for the next project. [Ch13]

## 2.2    Roles

Game development is a very interdisciplinary field consisting of the three broad disciplines: Design, Art and Engineering, which can be further divided into several sub-disciplines like Level Design, UI Design, 3D Art, 2D Art, Gameplay Programming, Engine and so on.

When developing a large project with multiple departments it is necessary to clearly assign responsibilities to specific roles.

The general leading roles in classic game production include (cmp. to [Ch13]):

- Producer: The producer's job is to ensure the game is delivered on time, in budget and with the necessary quality. To achieve this the producer concentrates mostly on improving the development process itself rather than the actual content and features by communicating and tracking the production plan.
- Art Director: The Art Director must keep the game's artistic assets consistent and related to one another.
- Creative Director: The Creative Director is responsible for communicating the creative vision of the game to the whole team.
- Technical Director: The Technical Director define the technical foundation of the project by for example setting coding standards or deciding which technologies are used.
- Art/Design/Engineering Lead: A Lead manages the task distribution for her/his team and ensures the quality of the work.

## 3.    Production of *Koa Bunga*

The following section shows how the previously discussed production principles where applied to *Koa Bunga*'s production while also laying out the production process based on major milestones. Problems that arose in the process are discussed as their solutions can be generalized to fit similar problems in other projects.

## 3.1   Development process

The biggest difference between the production of *Koa Bunga* and a classic game production is the production time. *Koa Bunga* was developed as a part of the module Gamedesign III which is scheduled to be finished in a single semester. The semester during which *Koa Bunga* was developed went from 4th October 2016 to 30th January 2017.

On first sight, this short development time can be compared to the development times of mobile games or independent games with small teams. *Koa Bunga* however is a special project in the sense that while it was developed in a very brief time, the team size of 62 people is relatively high which makes *Koa Bunga* more comparable to classic console and PC productions. Scaling down common times to reach milestones in a two-year development cycle [Ch13] to *Koa Bunga*'s four-month development cycle, shows that the game should be in Pre-Alpha for two and a half months, in Alpha for one month and in Beta for three weeks (see fig. 1).
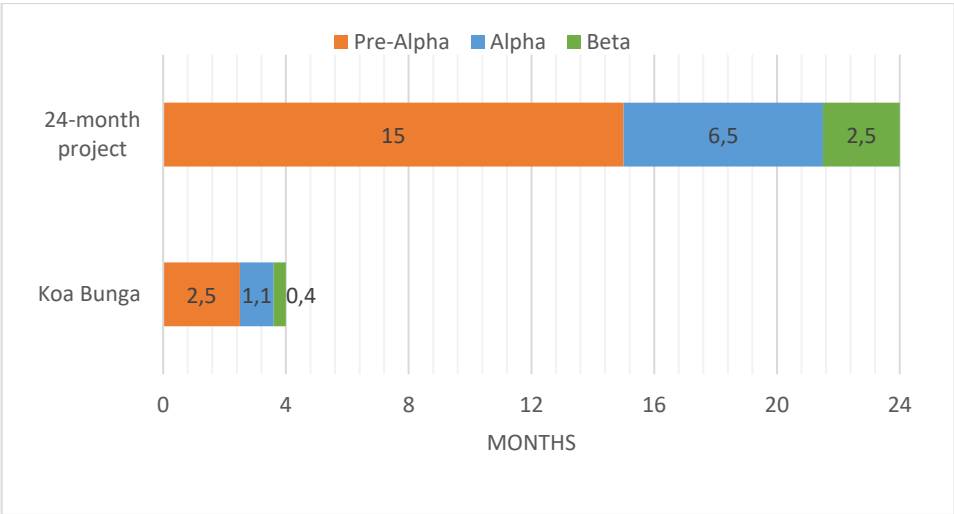


Fig. 1: Production milestones and their targeted date of completion

This lead to a very tight project schedule where *Koa Bunga* had to reach alpha state before the winter break. The producer emphasised the importance of this non-negotiable deadline throughout the development. Doing so helped the team in focusing the project and cutting unnecessary content and features where it was needed which was done in close cooperation with the teams affected by the changes.

After reaching alpha in time some levels where completely playable although it would take a lot more work to finish them from a visual standpoint. When the additional workload to finish the levels became apparent the level count was severely cut to focus on quality instead of quantity. Also, the task of building the levels was distributed between the Game

Design team and the Engine team instead of being solely done by the Engine team to speed up the process. Additionally, the Programming team took over other tasks from the Engine team to free up the time required to build the levels.

All these measures helped to achieve beta state, although the milestone had to be moved back for the team to be able to finish it. Besides the levels not being completely done one major aspect that pushed back the beta milestone was the asset for the main character. The reason for this was that the characters design went through several stages that could not be parallelised. First concept art for the character had to be created, then a model had to be created from the concept art which could then be animated. After that the finished character had to be imported into the actual game. Each step in this process took longer than expected so the character was in the game only two weeks before release.

Such a major asset can really change the feel of the game so having the character in the game this late could have jeopardized the project. However, when it became apparent during production that the deadline for the character could not be achieved in time a placeholder asset with animations was created to represent the main character. This enabled the designers to test the movement feel without having the actual character.

With only two weeks left before release no more major content was added to the game instead the team focused on polishing the existing features and content.

## 3.2    Team management

The development team of *Koa Bunga* consisted of 62 people working across nine different departments which included one Project Management department, one Event Management department, two Engineering departments, four Art departments and one design department.

For each department, there was at least one lead who managed the task distribution in her/his department. Above that were the directors who helped to keep the work consistent across the different departments. Even above that was the producer who while also working with each lead had the ultimate say in what had to be cut and done to finish the project.

On reviewing the development of *OnBeat – Rhythm of Rage*, the game that was developed in the Gamedesign III module one year prior to *Koa Bunga* a major flaw in this vertical hierarchy that was found was bad communication between departments.

While the hierarchy helped to ensure that responsibilities were very clearly divided and that each team member knew who to answer to it also held the danger that all communication would go through those people higher up in the hierarchy.

To avoid this and the ensuing bottlenecking of communication, horizontal communication across departments was an important goal for the team. One major solution to achieve this was to have several key team members work for multiple departments. This helped to

avoid certain departments working isolated on their side of the project without considering the viewpoints from the other departments.

The producer of *Koa Bunga* also emphasized the importance of working in the same space early on which helped to encourage the team to work together in the computer pools provided by university during fixed working hours once a week. During development, this severely cut communication times as when someone needed something or had a question the response time was instant.

## 4.    Conclusion

The classic game production principles discussed in this paper provide the framework for the communication in *Koa Bunga*'s production. By having clear and transparent milestones the development progress in one department becomes trackable by management and visible to the other departments. Team members can then see where their work fits into the whole production and can make independent yet still informed decisions about their work.

The clear hierarchy provided by splitting the team up in several departments allows the whole team to easily distinguish responsibilities, so everybody knows who to talk to when they have a specific question.

In the end, the most crucial challenge in managing a lot of people is facilitating effective communication. This is especially true for projects with many people working on them as with each new member the need for communication rises exponentially if everybody should be talking with each other.

The most important aspects of *Koa Bunga*'s development that help with effective communication include:

- Focusing on problem solving across different departments instead of blaming others for not reaching their milestones.
- Working with prototypes and placeholders to communicate ideas early on.
- Working in a shared space.
- Clearly communicating the necessity of certain milestones.
- Being honest about content that needs to be cut.
- Seeking help when it is needed.

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