# Starting position

The market for video games is currently in a continuous state of growth with an estimated increase of almost eight percent in 2017. [1] While many start-ups and small businesses are entering the business to find success, the demand for original and entertaining games is still growing.

# Idea

The plan is to develop a strategy game for desktop PCs. The primary objective will be to defend a central structure over multiple landscapes against waves of enemy units. This is accomplished by building offensive and defensive structures to hinder and destroy the incoming foes. Each enemy that is stopped will provide the player with a set amount of currency that allows him to further improve his defences. The Player must manage three different maps at once, all of which have enemies that move towards the central structure.

The player will be able to create his own maps and then play on them.

# Customer Value

The customer will be provided with an entertaining tower defence game with multiple original twists such as the increased challenge by having to manage multiple maps at once or the improved replayability due to the custom maps.

# State of the Art – Competition Analysis

There are many tower defense games which gained much popularity over the years. The most successful game released 2009 and is still a name people know about: Plants vs. Zombies. [2] It uses a small by grid where the enemies approach from one side and the “towers” are placed on the grid to fight against them. The enemies can destroy the towers when they’re near enough. Killed enemies give the player money to upgrade or place new towers.

# Main process

The main process is the player which plays the game

* The player starts the game, which he already has installed.
* He selects the standard mode.
* The player receives a specific amount of game currency.
* The player spends the money to place towers.
* The enemies are coming in waves.
* The towers try to shot down the enemies.
* A tower kills an enemy and the player receives money, which he can spend again for towers.
* An enemy reaches the players base and the base losses some health point.
* The player survives all waves and wins the game.

# Additional requirements

* The game should run with at least 30 frames per second even on low end PC’s.
* The GUI will be touch friendly.
* The language will be English.
* The first release will only be on PC.

# Resources

The most important resource required for the project, is a team of 4 members. Everyone must be experienced in Java and the architecture around it. Each one of us brings at least 1 year of experience in Java to the table, which is a good foundation to build upon. 2 party members have worked on games in Java before and are experienced enough to support the other members if necessary.

Dependent on the graphical user interface and its complexity, we might need some external know how or at least enough time to work ourselves into the subject.

Based on our experience and the time provided by the PSIT3 teachers. Our estimate would be that we need about 100-120 h per person to get this project done (guess based on “Information-Blatt Modul PSIT3”)

# Risks

The video game business is highly competitive and hard-fought. A considerable risk is that our game could go under the radar and be missed by the audience, which would cause sales to plummet.

Developing games is not easy. A small logical mistake could cause a lot of bugs or unpredictable behaviors. Fixing a multilayered problem with a lot of dependencies, can quickly escalate and break the budget in terms of time and money.

A visually not appealing graphical user interface, most certainly can scare off costumers. We need to make sure that our product appeals to a broad audience.

# Rough Sketch

The time required to finish the product is estimated to be 18 months whereas the prototype’s time schedule is set to be finished within 14 weeks. Within these 14 weeks the prototype will be built according to the Unified Process(UP) and each week represents an iteration. A first analysis yielded the following Use-Cases:

## Use-Cases:

1. Playing a variable number of rounds of the tower defense game with multiple enemy types and tower types. This includes the following Sub-Use-Cases:
   1. Placing affordable towers on the map
   2. Upgrading existing towers if affordable
   3. Tearing down towers
   4. Pause the running game
2. Loading a map in the game and playing it according to UC 1.
3. Exporting existing maps for editing via spreadsheet editors.

## Risks:

* Complexity of development exceeding expectations – resulting in more time-consuming effort.

## Rough Time Schedule for the Prototype

The development of the prototype will require an estimated amount of time of 480 hours which should be reached by weekly iterations according to the following time schedule:

|  |  |  |  |
| --- | --- | --- | --- |
| Phase | Iteration | Start / Duration [weeks] | Objective |
| Inception | 1 | 1 / 2 | Project sketch finished, IDE prepared, UC identified, Architecture determined |
| Milestone | M1 | End of Week 2 | Requirements for product determined |
| Elaboration | 2 | 3 / 2 | Detailed formulation of UC 1-3, Domain model defined |
|  | 3 | 5 / 2 | UI prototype defined, Architecture stable and as PoC verified |
| Milestone | M2 | End of week 6 | Architecture verified |
| Construction | 4 | 7 / 2 | UC 2-3 implemented and tested, UI prototype implemented |
|  | 5 | 9 / 2 | Implementing UC 1 and UI |
|  | 6 | 11 / 2 | UC 1 implemented and tested, UI finished, Integration tests finished |
|  | 7 | 13 / 2 | Cushion |
| Milestone | M3 | End of week 14 | Product finished, System tests finished, Documentation finished |

# Economics

We work for 120 hours each, which cumulates to a 480 hours project. Our goal is to pay ourselves about 40 francs per working hour. Together with the marketing campaign and a reasonable time buffer for testing and unexpected bug issues or changes, the project will cost about 35’000 franks.

The game will be sold on Steam (biggest online video game store) for 10 franks. Which means that at least 3500 copies need to be sold to break even. Steam has a multi-million audience and is a great platform to sell games on. We estimate to break even after about 4 months.

The first year will probably be the most successful, because the typical gamer craves for innovation and new experiences. A 50% decrease in sales per year, is a realistic vantage point. After 5 years, the estimated income will be around 220’000 francs, minus the first investment.

# Bibliography

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| [2] | EA. [Online]. Available: https://www.ea.com/en-gb/games/plants-vs-zombies/plants-vs-zombies-2. [Zugriff am 02 10 2017]. |