

Computer Games Laboratory - SS 2019

Team Rocket



beyond reach

Alexander Müller

Maximilian Mayer

Jan-Philipp Fahlbusch

Lukas Goll

Contents

1. Formal Game Proposal	2
1.1. Game Description	2
1.1.1. Storyline	2
1.1.2. Game Idea	2
1.1.3. Gameplay	3
1.1.4. Relation to Course Theme	3
1.1.5. Concept Art and Sketches	4
1.2. Technical Achievement	7
1.2.1. Generated Solar System	7
1.2.2. AI Factions	8
1.2.3. Hex Based Building	8
1.3. "Big Idea" Bullseye	8
1.4. Development Schedule	9
1.4.1. Plan in Layers	9
1.4.2. Task List	10
1.4.3. Task Timeline	15
1.5. Assessment	19
2. Game Prototype	20
3. Interim Report	20
4. Alpha Release	20
5. Playtesting	20
6. Public Presentation and Conclusion	20

Project Structure Document

1. Formal Game Proposal

1.1. Game Description

The game follows the narrative of mankind who leave their dying solar system through the help of artificial intelligence by building a galactic ark.

1.1.1. Storyline

Pressured by vanishing resources and a dying sun, mankind put their fate into the hands of their creation: Masterminds of artificial intelligence, capable of perfect rational decision making. The discovery of a planet with the requirements for life, as well as similar properties to earth sparks the torch of hope. With different ethnological ideas and beliefs concurring between the factions of the homeplanet, a space race begins with the goal to build the first giant vessel for safe passage. Its manufacture will take a lot of resources from multiple planets of the system. Only with the help of their artificial leader, people will be able to complete this journey before it is too late.

1.1.2. Game Idea

The player takes control of one of these leader AIs and tries to lead its group of people to victory, by completing multiple construction steps of the galactic ark. To do so, it will be required to collect enough resources that are scattered on the planets of the system. To harvest these, the player needs to expand its planetary base to provide means of workforce and production. Not only buildings for expansion but also factories, energy sources and housing will require strategic decision making. The base will go through stages of improvement, until it is required to embark on other planets with tougher environmental hazards to gather the required resources.

The player in the role of the AI must plan construction of his bases and maximization of building material, available energy and workforce satisfaction.

Since there are rivaling factions on the home planet, the player will compete against other AI's to be the first one finishing the ark project. Conflict between the fractions is certain, especially towards the endgame, in which later technologies require rarer materials from the edge of the solar system. This conflict might be resolved by fighting forces.

The game features a simulated solar system, with a central sun and planets with different properties. Planets will be connected by a galactic map, which enables the actors to move interplanetary.

At some stages of the game, the AI will be confronted with moral decisions, for instance using part of the population as energy resource to accelerate the expansion. The player is forced to decide as the AI, which is expected to choose the one 'right' decision, since it is rational. These moral dilemmas between technical effectiveness and human ethics will affect the game from there in terms of economic bonuses in contrast to human loyalty.

1.1.3. Gameplay

The Game takes place on spheres that represent planets of the solar system. Their surface consist of hexagonal fields, similar to strategic board games. The player is able to move the gameview around these planets in a top-down fashion. The game actors begin with a base on the homeplanet and aim to expand theirs on the hexagonal fields. They place multiple types of buildings with different effects such as mining a resource, or provide housing. Since construction requires building materials and workers, the actors have to wait until they produced enough material to continue. Therefore, optimal base planning is required to expand faster than their rivals. The effectiveness of tiles will be influenced by the adjacent environment they are placed in. Ultimately, it is the goal to succeed building the galactic ark in multiple steps faster then the others by optimizing his resource output.

At some point an actor gathers enough resources required to move ahead. He/She constructs a space port and ship units that travel on the galaxy map in between planets. These resources are spread throughout the solar system and are required to produce better technology, new tiles, improvements and parts for the ark. The ships feature different types for different purposes, for instance constructing a new base on a different planet, establishing trade routes or even combat and protection. These units are independently manageable and require some time to move between the planets.

1.1.4. Relation to Course Theme

With artificial intelligence as theme of this project, we decided to develop a game in which the player itself takes the role of an artificial intelligence. As AI is supposed to act rational, a strategy game does fit very well into the theme, since core gameplay requires to optimize the chain of actions to be more efficient than one's opponents.

Because humans steadily approach their end in this solar system, the choice of selecting an AI as their leader is justified. The top down view on a strategy game creates a illusion of almost god-like control over the human population. This fits well to an AI whose decision making is exceeding human comprehension. The usage of hexagonal shaped fields will help us to give the planets an organized and analytic feel to it, even with larger bases.

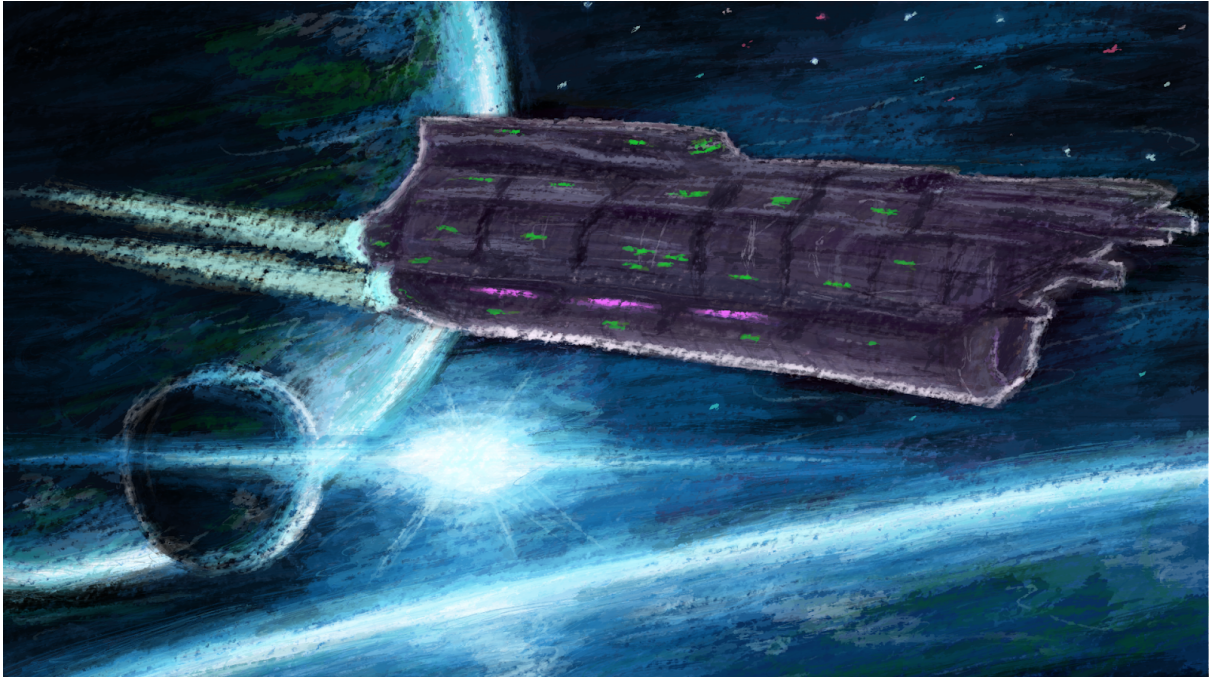
1.1.5. Concept Art and Sketches



Concept art for the look and feel of the player's base on the planet's surface. Here the player will construct buildings, such as the base, iron ore mine, steelworks, observatory, hangar, fuel extraction plant, ship building yard, ship hull factory, space station, population modul, food module, unobtainium ore refinery, advanced component factory, weapons factory, weapons alloy production, laser cell production, and the monumental shipyard for the escape vessel. Each planet will grant the player unique challenges and terrains, generated by our planet generator algorithm.



A concept art viewing the planets from the space station, which circles the planet and functions as a docking hub for larger ships. With this, the many resources featured in the game, such as iron ore, steel beam, fuel cell, ship hull plates, population, food, unobtainium ore, advanced component, weapons, weapons alloy, and laser cell, can be shipped between different planets.



This is a concept art of the large vessel for transporting the civilization to the edge of the galaxy. Building this vessel is the ultimate goal of the player and the first one reaching the edge of the galaxy wins the game.



This concept arts depicts a space battle, which is featured in our high targets. If we have enough time, we also want epic space battles between the factions as a feature in our game.



This image was taken from: <https://i.pinimg.com/originals/d1/e1/07/d1e107cdaaad05ecc217a4137ba4a533.png> . This is an idea on how the surface on our planets might look. The only difference is that our planets are round, as seen in the technical achievements.

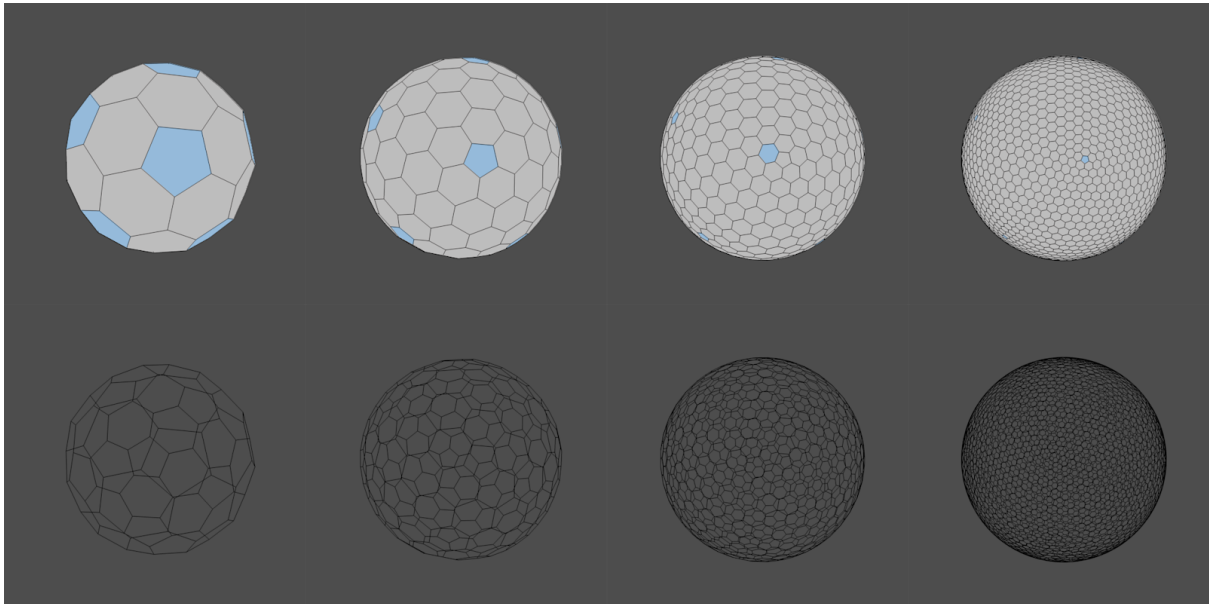


This image was taken from: <https://assetstore.unity.com/packages/3d/environments/sci-fi/polygon-sci-fi-space-pack-138857> . This is a low polygon asset pack in the unity asset store, which we will use for our game. As we have no skilled 3D artists, we choose to use this asset pack, so we can focus on programming tasks.

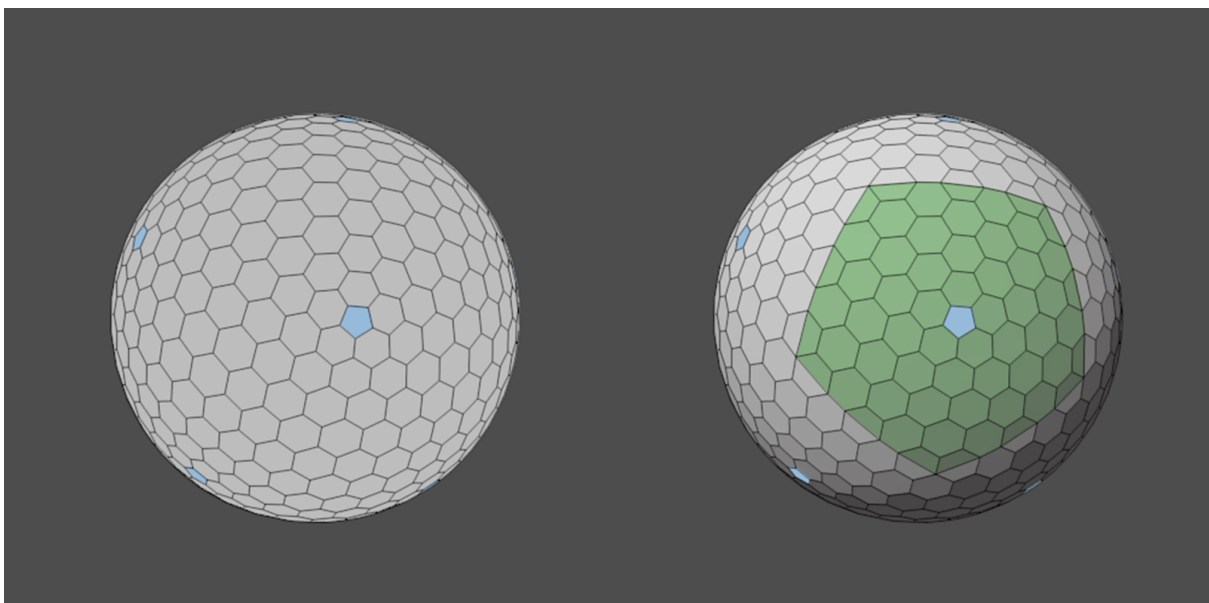
1.2. Technical Achievement

1.2.1. Generated Solar System

The solar system with its various planets is generated for each game. The planets are based on ico spheres, with their size being adjustable by adding hexagons in between the pentagons.



The planets are divided into sectors with the pentagons in their center. Since there are always 12 pentagons, each planet has 12 sectors with varying size. The sector base will always be based on the pentagon, and each sector can only be controlled by a single player.



Combining this with different atmospheres and biomes on the planets, the planets feature plenty of differences each playthrough.

1.2.2. AI Factions

Since the game is a singleplayer game, the two enemy factions are controlled by an advanced AI, capable of controlling all the functions available to the player. The AI has to adjust to the generated planets each playthrough, while still being balanced and its difficulty being comparable each playthrough.

1.2.3. Hex Based Building

Around the base building (on the pentagon), the player can build large bases out of single hex tile buildings. Different resources and biomes influence the players decisions and enforce varying playstyles each playthrough. The building serve a wide variety of functions, from resource mining and shipyards to food and science.

1.3. “Big Idea” Bullseye

In its core, the game is a multi-planetary strategy game. This allows for a wide variety of gameplay systems based on e.g. resources, habitability and biomes.

This concept is supported by the concept of generated planets. Combining different ground biomes with different atmospheres and planet sizes changes the look of those planets and refreshes the visuals for each playthrough. Random generator parameters adjust the gameplay as well and increase replayability a lot. Adding fog of war style exploration to each round forces the player to adjust his/her strategy each round and come up with new ideas on how to build the spaceship that takes the player’s people out of the solar system.



1.4. Development Schedule

1.4.1. Plan in Layers

- Functional minimum
 - Basic planet generation -> different sizes but only water
 - Sun in centre and planet rotates around sun
 - Basic camera movement around the planet
 - Resource system -> building resources for buildings (iron ore, steel beam)
 - First buildings -> base, iron ore mine, steelworks, monument shipyard -> build prefabs for models
 - Platform base model for buildings
 - Placing buildings actions
 - AI can place buildings based on blueprint(ish) system
 - Victory achievement process: Ore Mine -> Steelworks -> Shipyard(Monument)
- Low target
 - Generate more than one planet -> add land and atmospheres to planet generation
 - Build small solar system for the planets to move in and to be colonized
 - New buildings -> observatory, hangar, fuel extraction plant, ship building yard, ship hull factory -> build prefabs for models
 - New resources -> fuel cell and ship hull plates
 - Ships -> cargo ship and small explorer -> build prefabs for models
 - More complex camera system for different modes between planets and space
 - Ship movement between planets and transfer of resources between planets
 - Discovery mechanic of new planets with the observatory
 - AI can build new buildings and move ships
 - First UIs for ingame tasks
 - First soundtrack songs
 - Victory achievement process: Ore Mine -> Steelworks -> Observatory -> Other planet base(hangar, cargo, explorer ship) -> ship hull factory -> fuel extraction -> Shipyard(Monument)
- Desirable target
 - Workforce system
 - New resources -> population, food, unobtainium ore, advanced component
 - New buildings -> space station, population modul, food module, unobtainium ore refinery, advanced component factory -> build prefabs for models
 - New Ships -> people carrier, large cargo ship -> build prefabs for models
 - Menus and fancy in-game UI
 - Update AI to new workforce system and new components
 - Effects and and other visual enhancements
 - Soundtrack and effects, voice over
 - Victory achievement process: iron ore mine -> Steelworks -> Observatory -> Other planet base(hangar, cargo, explorer ship) -> ship hull factory -> fuel

extraction -> another planet base(space station, large cargo ship, people carrier) -> unobtainium ore mine -> advanced component factory -> Shipyard(Monument)

- High target
 - Tutorial for game, explaining all concepts step by step
 - Ability to load and save game
 - Fancy visual effects (clouds around planets)
 - Add different terrain to planet generation (different production speeds for different buildings on certain terrains)
 - Add different tiers of resources, that are better, on other planets (better statistics for buildings etc.)
 - Add different tiers of buildings, if they are constructed with different tier material
 - Combat system
 - New resources -> weapons, weapons alloy, laser cell
 - New buildings -> weapons factory, weapons alloy production, laser cell production -> build prefabs for models
 - New ships -> small cruiser, battleship, large destroyer -> build prefabs for models
 - Add strategic variation to AI
- Extras
 - Add different difficulty settings
 - Add people and robots walking on different planet field
 - Ship upgrades
 - Tech tree
 - 3rd parties (neutral factions)
 - World events such as quests, hazards
 - Monument travel to edge of solar system
 - Different factions
 - Multiplayer
 - Statistics screen
 - Achievements

1.4.2. Task List

For the high resolution task list PDF, please see our project Wiki page: <https://wiki.tum.de/display/gameslab2019/Team+Rocket?preview=/234292590/234292893/Project%20Task%20List.pdf>

PROJECT DETAILS								HOURS	
STATUS	PRIORITY	START DATE	END DATE	DURATION	TASK NAME	ASSIGNEE	DESCRIPTION	ESTIMATED HOURS	ACTUAL HOURS
Game Idea Milestone									
Complete	Functional Minimum	15/04/2019	21/04/2019	6	Project Setup	Jan	Set everything up to start the project	5	4
In Progress	Functional Minimum	22/04/2019	28/04/2019	6	Report	Everyone	Write the Report for the milestone and upload to the wiki	10	0
In Progress	Functional Minimum	22/04/2019	28/04/2019	6	Presentation	Everyone	Make the Presentation for the milestone and upload to the wiki	1	0
In Progress	Functional Minimum	15/04/2019	28/04/2019	13	Game Concept	Everyone	Create the basic game concept	10	0
In Progress	Functional Minimum	15/04/2019	28/04/2019	13	Draw Concept Arts	Everyone	Draw concepts arts and sketches of the basic mechanics in the game	15	0
In Progress	Functional Minimum	15/04/2019	28/04/2019	13	Game Idea	Everyone	Define the basic game idea	10	0
In Progress	Functional Minimum	15/04/2019	28/04/2019	13	Game Design	Everyone	Define the game in more detail	20	0
In Progress	Functional Minimum	22/04/2019	28/04/2019	6	Technical Achievements	Everyone	Define the technical achievements of the game	5	0
In Progress	Functional Minimum	22/04/2019	28/04/2019	6	Development Schedule	Everyone	Define the tasks and development schedule for the game	10	0
Prototype Milestone								162	0
Not Yet Started	Functional Minimum	29/04/2019	05/05/2019	6	Critiques	Everyone	Written critiques of all other projects as an email to the supervisors	1	0
Not Yet Started	Functional Minimum	06/05/2019	12/05/2019	6	Report	Everyone	Write the Report for the milestone and upload to the wiki	10	0
Not Yet Started	Functional Minimum	06/05/2019	12/05/2019	6	Presentation	Everyone	Make the Presentation for the milestone and upload to the wiki	1	0
Not Yet Started	Functional Minimum	06/05/2019	12/05/2019	6	Mutual Critiques	Everyone	Submit mutual critiques on the wiki (every team member separately)	1	0
Not Yet Started	Functional Minimum	29/04/2019	05/05/2019	6	Paper Prototype Building	Everyone	Build the paper prototype of the game	20	0
Not Yet Started	Functional Minimum	29/04/2019	05/05/2019	6	Paper Prototype Design	Everyone	Design the paper prototype of the game	20	0
Not Yet Started	Functional Minimum	29/04/2019	05/05/2019	6	FM Building Stats	Jan, Maxi	Define the statistics (cost, production etc.) of the bulings in the functional minimum stage	1	0
Not Yet Started	Functional Minimum	29/04/2019	12/05/2019	13	Loading Data System	Jan, Maxi	Implement the loading of building and other important data from file	2	0
Not Yet Started	Functional Minimum	06/05/2019	12/05/2019	6	FM Building Models	Jan, Maxi	Build the preabs for the building models in the functional minimum stage	8	0
Not Yet Started	Functional Minimum	29/04/2019	12/05/2019	13	FM Building Implementation	Jan, Maxi	Implement the functional minimum buildings into the gameplay	10	0
Not Yet Started	Functional Minimum	29/04/2019	05/05/2019	6	Unity Setup	Alex	Setup the Unity project with assets and settings needed for our game	2	0
Not Yet Started	Functional Minimum	29/04/2019	05/05/2019	6	Controls Design	Jan, Maxi	Design the control scheme of the game	1	0
Not Yet Started	Functional Minimum	06/05/2019	12/05/2019	6	Playtesting Paper Prototype	Everyone	Playtest the paper prototype	10	0
Not Yet Started	Functional Minimum	06/05/2019	12/05/2019	6	Refining Paper Prototype	Everyone	Refine the paper prototype based on the playtesting sessions	10	0
Not Yet Started	Functional Minimum	06/05/2019	12/05/2019	6	Basic Planet Generation	Alex	Build the basic planet generation for our game	10	0

Not Yet Started	Functional Minimum	06/05/2019	12/05/2019	6	Lighting and Sun	Alex	Build the sun in the middle of the solar system and implement the light emission	1	0
Not Yet Started	Functional Minimum	06/05/2019	12/05/2019	6	Basic Planet Movement	Jan, Maxi	Implement the planets moving around the sun	2	0
Not Yet Started	Functional Minimum	29/04/2019	05/05/2019	6	Basic Controls	Jan, Maxi	Implement the basic controls needed on the first planet	4	0
Not Yet Started	Functional Minimum	29/04/2019	05/05/2019	6	Tools Setup	Alex	Setup and build all tools needed for the project	5	0
Not Yet Started	Functional Minimum	06/05/2019	12/05/2019	6	Basic Resource System	Jan, Maxi	Implement the first basic resource system	2	0
Not Yet Started	Functional Minimum	29/04/2019	05/05/2019	6	Modelling Placeholder Planet	Alex	Model the placeholder for the planet, so that gameplay programming can begin	2	0
Not Yet Started	Functional Minimum	29/04/2019	05/05/2019	6	Modelling of Platform	Alex	Model the base platform, which will house all buildings in our game	4	0
Not Yet Started	Functional Minimum	29/04/2019	05/05/2019	6	Building Placement System	Jan, Maxi	Implement the placement system for the buildings on the planet	10	0
Not Yet Started	Functional Minimum	29/04/2019	12/05/2019	13	Basic AI	Lukas	Implement the basic AI of the enemies for the functional minimum stage	20	0
Not Yet Started	Functional Minimum	06/05/2019	12/05/2019	6	Basic Victory Condition	Jan, Maxi	Implement the first victory condition in the functional minimum stage	5	0

Interim Demo Milestone

Not Yet Started	Functional Minimum	27/05/2019	02/06/2019	5	Report	Everyone	Write the Report for the milestone and upload to the wiki	10	0
Not Yet Started	Functional Minimum	27/05/2019	02/06/2019	5	Presentation	Everyone	Make the Presentation for the milestone and upload to the wiki	1	0
Not Yet Started	Functional Minimum	13/05/2019	19/05/2019	6	Playtesting FM	Everyone	Playtest the functional minimum game from the previous milestone	5	0
Not Yet Started	Functional Minimum	13/05/2019	19/05/2019	6	Adjust Gameplay	Jan, Maxi	Adjust the functional minimum gameplay based on the findings in the playtest	6	0
Not Yet Started	Functional Minimum	13/05/2019	19/05/2019	6	Fine-Tune FM AI	Lukas	Fine-tune the AI based on the findings in the playtest	6	0
Not Yet Started	Functional Minimum	13/05/2019	19/05/2019	6	FM Bug Fixing	Everyone	Fix any bugs found during the playtest and polish the gameplay	10	0
Not Yet Started	Functional Minimum	13/05/2019	19/05/2019	6	Multiple Planet Generation	Alex	Implement the generation of multiple planets and polish the current generation process	10	0
Not Yet Started	Low Target	20/05/2019	02/06/2019	12	Add Components to Generation	Alex	Add new components to the planet generation, such as land masses, atmosphere and animated water	35	0
Not Yet Started	Low Target	13/05/2019	19/05/2019	6	Build Solarsystem	Jan, Maxi	Build a moving solarsystem out of the planets	4	0
Not Yet Started	Low Target	13/05/2019	19/05/2019	6	LT Building Stats	Jan, Maxi	Define the statistics of the new buildings added in the low target	1	0
Not Yet Started	Low Target	13/05/2019	26/05/2019	13	LT Building Models	Jan, Maxi	Build the prefab models for all the buildings	10	0
Not Yet Started	Low Target	13/05/2019	26/05/2019	13	LT Building Implementation	Jan, Maxi	Implement the low target buildings into the game	6	0
Not Yet Started	Low Target	20/05/2019	26/05/2019	6	Add LT Resources	Jan, Maxi	Add the low target resources into the game	3	0
Not Yet Started	Low Target	20/05/2019	26/05/2019	6	LT Ship Stats	Jan, Maxi	Define the statistics of the ships added in the low target	1	0
Not Yet Started	Low Target	20/05/2019	02/06/2019	12	LT Ship Models	Jan, Maxi	Build the prefabs for the low target ship models	4	0
Not Yet Started	Low Target	20/05/2019	02/06/2019	12	LT SHIP Implementation	Jan, Maxi	Implement the low target ships into the game	4	0
Not Yet Started	Low Target	20/05/2019	26/05/2019	6	Advanced Controls	Jan, Maxi	Implement the advanced controls for the camera, which differentiates between the planet and the general solarsystem	8	0

219 0

Not Yet Started	Low Target	20/05/2019	26/05/2019	6	Ship Selection System	Jan, Maxi	Implement the system to select and command ships to new positions	10	0
Not Yet Started	Low Target	20/05/2019	26/05/2019	6	Ship Pathfinding System	Jan, Maxi	Implement the pathfinding system for the ships	6	0
Not Yet Started	Low Target	27/05/2019	02/06/2019	5	Resource Transfer System	Jan, Maxi	Implement the resource transfer system between two planets	12	0
Not Yet Started	Low Target	27/05/2019	02/06/2019	5	Discovery Mechanic	Jan, Maxi	Implement the discovery mechanic, to discover new planets with the observatory	12	0
Not Yet Started	Low Target	20/05/2019	02/06/2019	12	AI Additions for LT	Lukas	Adjust and implement the newly added features from the low target to the AI implementation	35	0
Not Yet Started	Low Target	20/05/2019	02/06/2019	12	Simple In-Game UI	Alex	Design and implement first simple UIs for in-game actions, such as selecting and placing buildings and transferring goods	10	0
Not Yet Started	Low Target	20/05/2019	02/06/2019	12	First Soundtracks	Maxi	Create and add first soundtrack samples for the game (background music)	5	0
Not Yet Started	Low Target	27/05/2019	02/06/2019	5	LT Victory Condition	Jan, Maxi	Implement the victory conditions for the low target game	5	0

Alpha Release Milestone

Not Yet Started	Functional Minimum	17/06/2019	23/06/2019	6	Report	Everyone	Write the Report for the milestone and upload to the wiki	10	0
Not Yet Started	Functional Minimum	17/06/2019	23/06/2019	6	Presentation	Everyone	Make the Presentation for the milestone and upload to the wiki	1	0
Not Yet Started	Low Target	03/06/2019	09/06/2019	6	Playtesting LT	Everyone	Playtest the low target game from the previous milestone	5	0
Not Yet Started	Low Target	03/06/2019	09/06/2019	6	Adjust Gameplay	Jan, Maxi	Adjust the gameplay based on the findings in the playtest	6	0
Not Yet Started	Low Target	03/06/2019	09/06/2019	6	Fine-Tune LT AI	Lukas	Fine-tune the AI based on the experience in the playtests	10	0
Not Yet Started	Low Target	03/06/2019	09/06/2019	6	LT Bug Fixing	Everyone	Fix bugs encountered during the playtesting	10	0
Not Yet Started	Low Target	03/06/2019	09/06/2019	6	Planet Generation Fine-Tuning	Alex	Fine-tune the generation of the planets based on the playtest	6	0
Not Yet Started	Desirable Target	03/06/2019	09/06/2019	6	Workforce System	Jan, Maxi	Define the workforce system that will be added during the desirable target stage	2	0
Not Yet Started	Desirable Target	03/06/2019	09/06/2019	6	Add DT Resources	Jan, Maxi	Implement the resources of the desirable target stage, including to fully implement the workforce system	10	0
Not Yet Started	Desirable Target	03/06/2019	09/06/2019	6	DT Building Stats	Jan, Maxi	Define the statistics for the desirable target buildings	1	0
Not Yet Started	Desirable Target	03/06/2019	16/06/2019	13	DT Building Models	Jan, Maxi	Build the prefab models for the desirable target buildings	10	0
Not Yet Started	Desirable Target	03/06/2019	16/06/2019	13	DT Building Implementation	Jan, Maxi	Implement the new buildings for the desirable target stage	15	0
Not Yet Started	Desirable Target	10/06/2019	16/06/2019	6	DT Ship Stats	Jan, Maxi	Define the statistics of the desirable target ships	1	0
Not Yet Started	Desirable Target	10/06/2019	23/06/2019	13	DT Ship Models	Jan, Maxi	Build the prefab models for the desirable target ships	4	0
Not Yet Started	Desirable Target	10/06/2019	23/06/2019	13	DT Ship Implementation	Jan, Maxi	Implement the new ships for the desirable target stage	4	0
Not Yet Started	Desirable Target	03/06/2019	23/06/2019	20	Game Menu UI	Alex	Implement a game menu to start the game, as well as a pause menu during game play	8	0
Not Yet Started	Desirable Target	03/06/2019	23/06/2019	20	Fancy In-Game UI	Alex	Implement fancy in-game UI for better usability of our game	10	0
Not Yet Started	Desirable Target	10/06/2019	23/06/2019	13	AI Additions for DT	Lukas	Add all new features from the desirable target to the AI system	35	0
Not Yet Started	Desirable Target	03/06/2019	23/06/2019	20	Visual Effects	Alex	Add different visual effects to the game	10	0

208 0

Not Yet Started	Desirable Target	03/06/2019	23/06/2019	20	Visual Enhancements	Alex	Add different visual enhancements to the game	10	0	0
Not Yet Started	Desirable Target	03/06/2019	23/06/2019	20	Soundtrack	Maxi	Add more soundtracks to the game (menu music, planet music, etc.)	10	0	0
Not Yet Started	Desirable Target	03/06/2019	23/06/2019	20	Sound Effects	Maxi	Add different soundeffects to the game	10	0	0
Not Yet Started	Desirable Target	17/06/2019	23/06/2019	6	Playtesting DT	Everyone	Playtest the almost final version of the desirable target game	5	0	0
Not Yet Started	Desirable Target	17/06/2019	23/06/2019	6	Add Simple Tutorial	Alex	Add a simple tutorial for the upcoming playtests	6	0	0
Not Yet Started	Desirable Target	17/06/2019	23/06/2019	6	Adjust Gameplay	Jan, Maxi	Adjust the gameplay based on the findings in the playtest	6	0	0
Not Yet Started	Desirable Target	17/06/2019	23/06/2019	6	DT Victory Condition	Jan, Maxi	Add the victory conditions for the desirable target	3	0	0

Playtesting Milestone

Not Yet Started	Functional Minimum	01/07/2019	07/07/2019	6	Report	Everyone	Write the Report for the milestone and upload to the wiki	10	0	0
Not Yet Started	Functional Minimum	01/07/2019	07/07/2019	6	Presentation	Everyone	Make the Presentation for the milestone and upload to the wiki	1	0	0
Not Yet Started	Desirable Target	24/06/2019	30/06/2019	6	Playtesting DT	Everyone	Playtest the desirable target game	6	0	0
Not Yet Started	Desirable Target	24/06/2019	30/06/2019	6	Adjust Gameplay	Jan, Maxi	Adjust the gameplay based on the playtest	10	0	0
Not Yet Started	Desirable Target	24/06/2019	30/06/2019	6	Fine-Tune DT AI	Lukas	Fine-tune the AI based on the playtest	10	0	0
Not Yet Started	Desirable Target	24/06/2019	30/06/2019	6	DT Bug Fixing	Everyone	Fix any bugs encountered during playtesting	10	0	0
Not Yet Started	Desirable Target	24/06/2019	30/06/2019	6	Gameplay Polishing	Jan, Maxi	Polish the gameplay for the playtest session	5	0	0
Not Yet Started	Desirable Target	24/06/2019	30/06/2019	6	AI Polishing	Lukas	Polish the AI behaviour for the playtest session	5	0	0
Not Yet Started	Functional Minimum	24/06/2019	30/06/2019	6	Create Questionary	Everyone	Create the questionary for the the playtest session	2	0	0
Not Yet Started	Functional Minimum	24/06/2019	30/06/2019	6	Playtest Scenario	Everyone	Define the playtest session and what the participants are supposed to do	2	0	0
Not Yet Started	Functional Minimum	01/07/2019	07/07/2019	6	Playtest Session	Everyone	Playtest the game with external players	30	0	0
Not Yet Started	Desirable Target	24/06/2019	30/06/2019	6	Visual Polishing	Alex	Polish the visuals of the game	10	0	0
Not Yet Started	Desirable Target	24/06/2019	30/06/2019	6	Sound Polishing	Maxi	Polish the sound of the game	5	0	0
Not Yet Started	Desirable Target	24/06/2019	30/06/2019	6	UI Polishing	Alex	Polish the UI of the game	5	0	0
Not Yet Started	High Target	24/06/2019	07/07/2019	13	Advanced Tutorial	Alex	Create an advanced and more detailed tutorial	6	0	0
Not Yet Started	High Target	01/07/2019	07/07/2019	6	Strategic Variation for AI	Lukas	Start implementing strategic variations in the AI behaviour	10	0	0
Not Yet Started	Desirable Target	01/07/2019	07/07/2019	6	Apply Feedback to Game	Everyone	Apply the feedback from the playtest to the game and fix any complaints	20	0	0
Not Yet Started	Desirable Target	01/07/2019	07/07/2019	6	Bug Fixing	Everyone	Fix any bugs encountered during playtesting	10	0	0
Not Yet Started	Desirable Target	01/07/2019	07/07/2019	6	Polishing	Everyone	Polish any unpolished aspects encountered during playtesting	10	0	0
Not Yet Started	Functional Minimum	01/07/2019	07/07/2019	6	Feedback Analysis	Everyone	Analyse the feedback from the playtest session	2	0	0

Final Release Milestone

Not Yet Started	Functional Minimum	15/07/2019	21/07/2019	6	Report	Everyone	Write the Report for the milestone and upload to the wiki	10	0	0
-----------------	--------------------	------------	------------	---	--------	----------	---	----	---	---

138 0

169 0

Not Yet Started	Functional Minimum	15/07/2019	21/07/2019	6	Presentation	Everyone	Make the Presentation for the milestone and upload to the wiki!	1	0
Not Yet Started	Functional Minimum	15/07/2019	21/07/2019	6	Video	Everyone	Make a video that highlights exciting aspects of the game	2	0
Not Yet Started	Functional Minimum	15/07/2019	21/07/2019	6	Completed Game	Everyone	Completed final version of game with sources	1	0
Not Yet Started	Desirable Target	08/07/2019	21/07/2019	13	Bug Fixing	Everyone	Fix all known bugs for final version	20	0
Not Yet Started	Desirable Target	08/07/2019	21/07/2019	13	Polishing	Everyone	Polish everything for final version	20	0
Not Yet Started	Desirable Target	08/07/2019	21/07/2019	13	Playtesting	Everyone	Playtest the whole game to find any rough edges	20	0
Not Yet Started	High Target	08/07/2019	21/07/2019	13	Fancy Visuals	Alex	If time, add fancy visuals (clouds around planet)	10	0
Not Yet Started	High Target	08/07/2019	21/07/2019	13	Different Terrain	Alex	If time, add different terrain to planet generation (different production speeds)	10	0
Not Yet Started	High Target	08/07/2019	21/07/2019	13	Save and Load System	Jan, Maxi	If time, implement a save and loading system	10	0
Not Yet Started	High Target	08/07/2019	21/07/2019	13	Resource Tier System	Jan, Maxi	If time, implement a tier system for the resources	5	0
Not Yet Started	High Target	08/07/2019	21/07/2019	13	Strategic Variation for AI	Lukas	If time, implement more variations for the playstyles of the AI	10	0
Not Yet Started	Extras	08/07/2019	21/07/2019	13	Difficulty Settings	Jan, Maxi, Lukas	If time, implement different difficult settings	10	0
Not Yet Started	Extras	08/07/2019	21/07/2019	13	Animated Buildings	Alex	If time, implement animated people walking around on the buildings on a planet	5	0
Not Yet Started	Extras	08/07/2019	21/07/2019	13	Monument Travel	Jan, Maxi	If time, make the goal to travel with the ship to the edge of the solar system	4	0

1.4.3. Task Timeline

For the high resolution task list PDF, please see our project Wiki page:

<https://wiki.tum.de/display/gameslab2019/Team+Rocket?preview=/234292590/234292894/Project%20Timeline.pdf>

PHASE	TARGET CODE	DEV	DETAILS	PROJECT WEEK:				APRIL			
				15	22	29	6	13	M		
	Functional Minimum Target	Low Target	Desirable Target	High Target	Extra						
1	Game Design	Everyone	- Deliverables	Project Setup	Report	Critiques	Report Presentation	Playtesting PM			
		Everyone	- Playlist	Game Concept Arts	Draw Concept Arts	Paper Prototype Design	Refining Paper Prototype	LT Building State			
2	Modelling	Jan, Maxi	- Base Models			Director's Plan!	FM Building Models	LT Building Models			
		Alex	- Tile Models			Game Building Platform					
3	Scripting	Jan, Maxi	- Special Effects								
		Alex	- Moving Models								
4	Rendering	Jan, Maxi	- Gameplay								
		Lukas	- Artificial Intelligence	FM Building Implementation	FM Building Implementation	Build Solver system	LT Building Implementation				
5	UI	Alex	- Planet Generation								
		Jan, Maxi	- Game Systems	Basic AI	Building Placement System	Basic Victory Condition	File-Tune FM AI	Multiple Planet Generation			
6	Sound	Alex	- Tools								
		Everyone	- Bugfixing & Polishing	Building Placement System	Loading Data System	Adjust Gameplay					
		Alex	- Render Backend								
		Alex	- Tech Art								
		Alex	- Shaders								
		Alex	- Menus								
		Alex	- InGame								
		Alex	- HUD								
		Maxi	- Effects								
		Maxi	- Soundtrack								

Game Idea Milestone

Prototype Milestone

PHASE	TARGET CODE	DEV			PROJECT WEEK:	Q2			JUN	
		Functional Low Medium Target	Deadline High Target	Essas		IV	20	27		3
1	Game Design	Everyone	- Deliverables - Playtest	Everyone	LT Ship Sails	Report Presentation		Playtesting LT		
								Mid/late System DT Building Sails	DT Ship Sails	
2	Modelling	Jan, Maxi	- Base Models - Tie Models - Special Effects - Moving Models	Jan, Maxi	LT Building Models			DT Building Models		
							Visual Effects	DT Ship Models	Visual Effects	
3	Scripting	Jan, Maxi	- Gameplay	Lukas	Add LT Resources LT Building Generation LT Ship Implementation	LT Ship Models		Add DT Resources DT Building Generation DT Ship Implementation	DT Building DT Ship Implementation	DT Ship Implementation DT Victory Conditions
					AI Additions for LT Add Components to Generation Advanced Controls for Ship Purification System	AI Additions for LT Add Components to Generation Resource Transfer System	Fine-Tune LT AI Planet Generation Fine-Tuning	AI Additions for DT	AI Additions for DT	
4	Rendering	Alex	- Render Backend - Tech Art - Shaders	Alex				Adjust Gameplay LT Bug Fixing		Adjust Gameplay
					Planet Shader	Planet Shader	Visual Enhancements	Visual Enhancements	Visual Enhancements	
5	UI	Alex	- Menus - In-Game - HUD	Alex	Simple In-Game UI		Game Menu UI Fancy In-Game UI	Game Menu UI Fancy In-Game UI	Game Menu UI Simple Tutorial Fancy In-Game UI	Game Menu UI Fancy In-Game UI
							Sound Effects Soundtrack	Sound Effects Soundtrack	Sound Effects Soundtrack	
6	Sound	Maxi	- Effects - Soundtrack	Maxi	Final Soundtracks	Final Soundtracks	Sound Effects Soundtrack	Sound Effects Soundtrack	Sound Effects Soundtrack	

Interim Demo Milestone

Alpha Release Milestone

PHASE	TARGET CODE				DEV	DETAILS				08			
	Functional Minimum	Low Target	Detail High Target	High Exits		PROJECT WEEK:				JUL			
1 Game Design	Everyone	- Deliverables - Playtest	Everyone	- Components	24	1	8	15	22	29			
					Report Presentation	Playtesting	Report Presentation Video Complete Game						
2 Modelling	Jan, Maxi Alex	- Base Modelle - Tile Models - Special Effects	Jan, Maxi Alex	- Moving Models	24	1	8	15	22	29			
					Polishing	Polishing	Polishing	Polishing	Polishing	Polishing	Polishing	Polishing	Polishing
3 Scripting	Lukas Alex Jan, Maxi Alex	- Artificial Intelligence - Panel Generation - Game Systems - Tools	Lukas Alex Jan, Maxi Alex	- Bugfixing & Polishing	24	1	8	15	22	29			
					Adjust Gameplay	Apply Feedback to Game	Difficulty Settings Monument Travel	Difficulty Settings Monument Travel	Difficulty Settings Monument Travel	Difficulty Settings Monument Travel	Difficulty Settings Monument Travel	Difficulty Settings Monument Travel	Difficulty Settings Monument Travel
4 Rendering	Alex Alex	- Render Backend - Tech Art - Shaders	Alex Alex	- Bug Fixing	24	1	8	15	22	29			
					Visual Polishing	Polishing	Bug Fixing	Bug Fixing	Bug Fixing	Bug Fixing	Bug Fixing	Bug Fixing	Bug Fixing
5 UI	Alex Alex	- Menus - In-Game - HUD	Alex Alex	- Soundtrack	24	1	8	15	22	29			
					Advanced Tutorial	Polishing	Advanced Tutorial	Polishing	Polishing	Polishing	Polishing	Polishing	Polishing
6 Sound	Maxi	- Effects - Soundtrack	Maxi	- Sound Polishing	24	1	8	15	22	29			
					Sound Polishing	Polishing	Sound Polishing	Polishing	Sound Polishing	Polishing	Sound Polishing	Polishing	Sound Polishing
					Playtesting Milestone				Final Release Milestone				

1.5. Assessment

In our game players embark on a journey through a solar system in which they race for survival in an epic battle of expansion. Resource planning, strategy making or population organisation are only few of the many tasks awaiting players. Starting off in small scope with construction of resource facilities on the home planet, continuing with expansion to other sectors and growing more population, up to exploring the seemingly endless solar system and claiming one's leadership in the race to universe - there are endless possibilities.

Every game cycle will feel and play differently as the random generation of the solar system mixes the world together. Each playthrough can have a different outcome depending on the starting configurations and the decisions the players make throughout the game. As the computer controlled AI is the focus of our project, it contributes a lot to the diversity and is the best incentive for our players to enjoy another round in the manifold universe.

We aim for an audience that is driven by an explorative and construction-loving mind. While already highschool teenagers with sense for adventures might like the game, it is also compelling for every strategy lover who wants slightly more challenge. In general, the audience's age is not restricted by an upper bound. As no to few violence will appear in the game and due to the adjustable difficulty, a wide range of players can be addressed. As a comparable audience fans and followers of games like *Sid Meier's Civilization* or *Stellaris* could be named.

For judging the design success in the end there are multiple factors that have to be taken into account:

- The game itself should be attractive in terms of looks and sounds to the player and feel new every round. The random generation of worlds has to make players want to try the game again in new and different settings over and over again.
- It is necessary that the gameplay itself is immersive and pulls the player into the world by well balanced features, progression and decisions that a player can make.
- The AI has to pose a serious opponent for the player which makes him/her go with the flow in a balance between ability and challenge.

If all those aspects work together, the final product will be a very good looking and charming interstellar strategy game, that offers enough complexity for players to enjoy as well as a challenging, but not unfair, AI that can keep up to expectations of human players.

2. Game Prototype
3. Interim Report
4. Alpha Release
5. Playtesting
6. Public Presentation and Conclusion