Official Game Design Document

1. Overview

AstVenture

2. Audience/Platform

iOS

3. Main Gameplay

Within the game, the player is able to perform different steps to experience various asteroids. The character is a spaceship which travels through the space. When landed on an asteroid, the character is a rover that explores the asteroid.

a. Overview Map

In the Overview Map, one can chose an asteroid that is landed on. On the map are several asteroids. Some of them shimmer blue, which means that it is possible to go there but they are not scanned yet. If the player clicks on one of them, a popup with a "Scan"-button shows up. The player is now able to scan the asteroid to know, how difficult the level will be. In addition, it has to be said that the estimation will be better if several items from the catalog have been improved. At the beginning, the information of the asteroid is not that reliable as it will be in the proceeding course of the game.
After scanning an asteroid, they shimmer in either green, yellow or red colours. The different colours represent the difficulty of the level. While within a green level it is easier to land, red levels are more likely to be failed. The colours can change due to an improvement of items. When an asteroid is scanned, the information about the asteroid is shown and the button changes to a "Land"-button. If the player clicks on it, the landing begins.
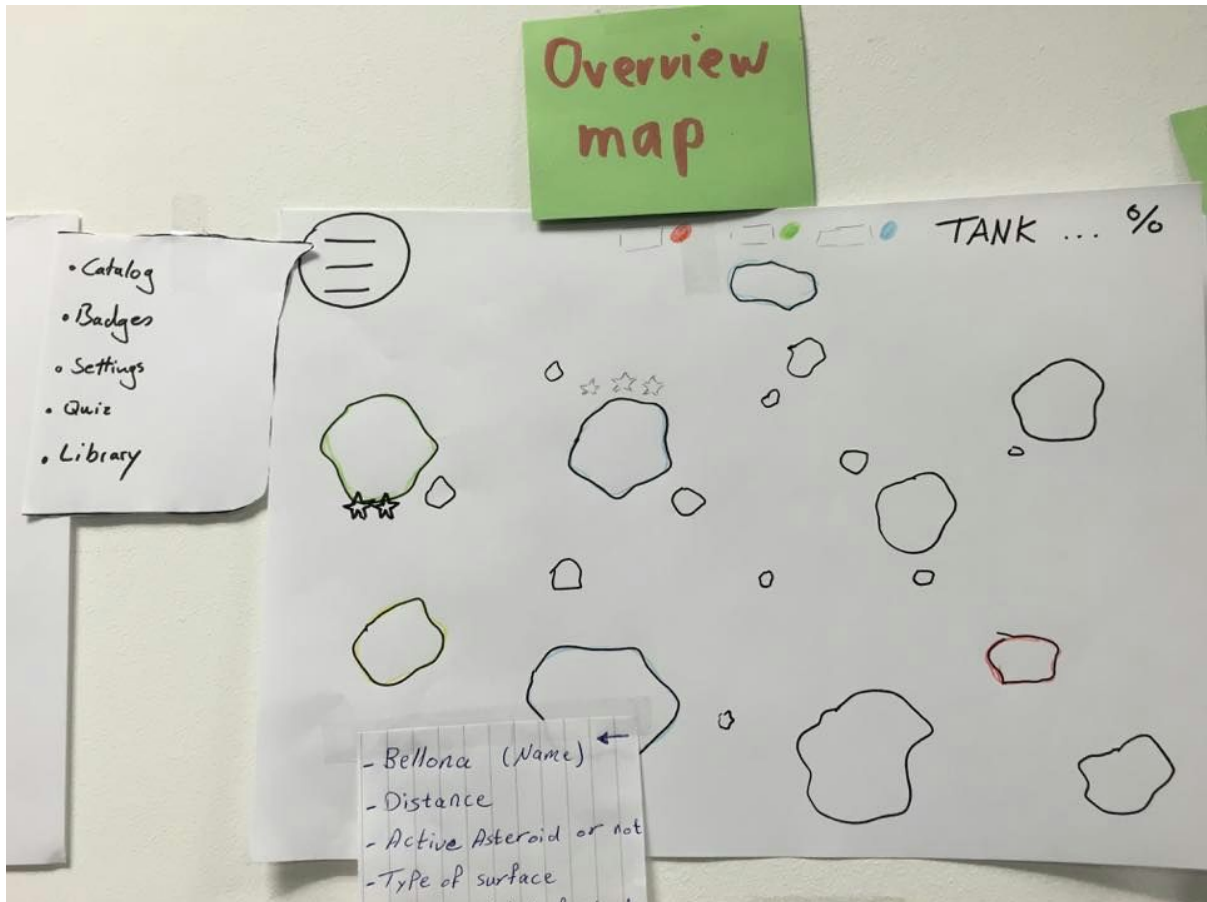
b. Landing

Within the landing, there are three different phases that the player has to go through.

i. Phase 1

In the first phase, the player has to get closer to the asteroid. Hereby, space trash is blocking the way and the spaceship has to avoid it. If the player goes astray too much, he will not be able to reach the second phase since the tank will not last. In comparison, if the tank is sufficient for the journey, the player will get to the next phase. Sensors that can be added and improved for this phase are the magnetometer, gyrometer, momentum, accelerometer as well as thrusters and a laser. The shield of the spaceship scuffs faster if trash is hit.
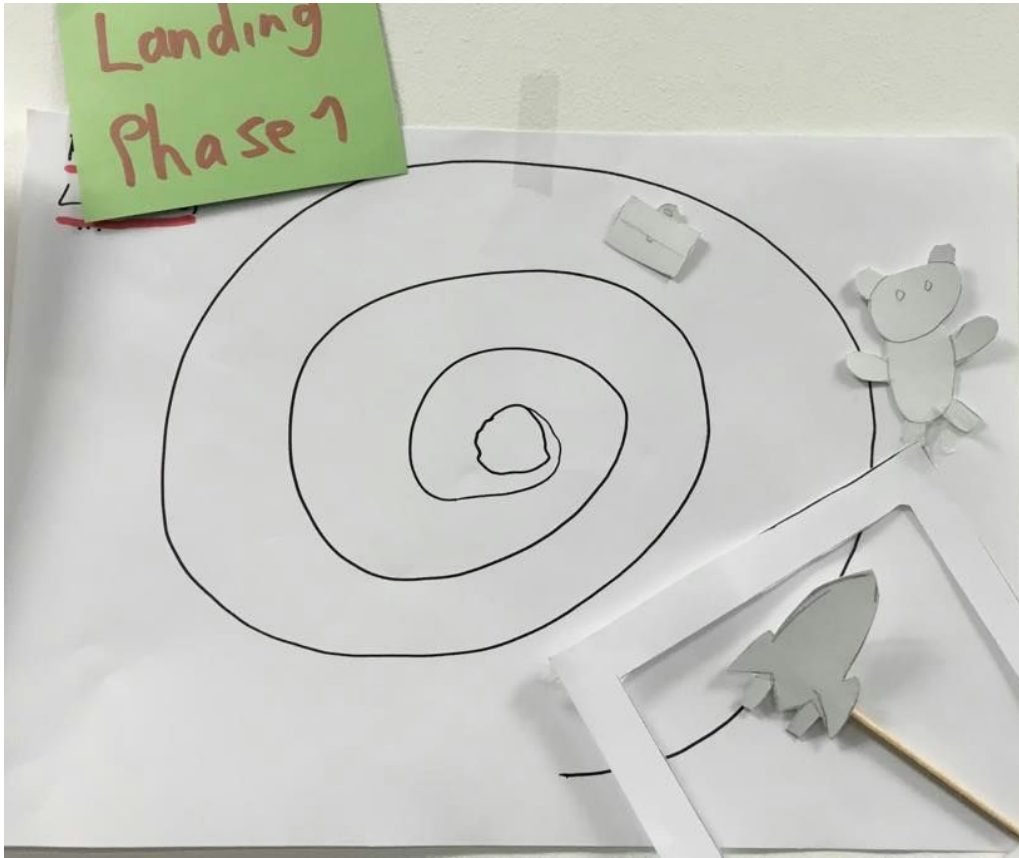
ii. Phase 2

In this phase the spaceship is circulating around the asteroid. The asteroid has an outer circle that is represented by different colours. The player is now able to decide where he wants to land his spaceship, while the colours give him hints for the perfect place to land. In this phase, the player just has to click on the screen to land on the specific place. For this phase the improvement of the point cloud generator can help to get a more precise estimation of the surface and therefore better landing places.
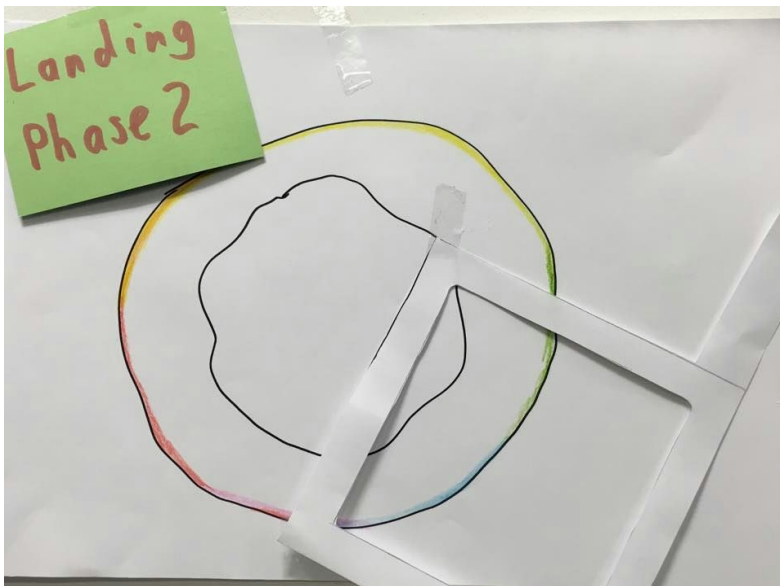
iii. Phase 3

The third phase is all about actually landing the spaceship on the asteroid and again finding a good position to do so. The player sees different places where he is able to land - marked in green - and has to move the spaceship to the desired landing place. In addition, a bar is shown where the player has to touch the display in the right moment in order to get the perfect landing. Otherwise, it can happen that the spaceship crashes and loses some of the items. Sensors that can be improved or added for this phase are also shields to protect the spaceship in case of crashing, an altimeter, harpoons and a parachute to land the spaceship.
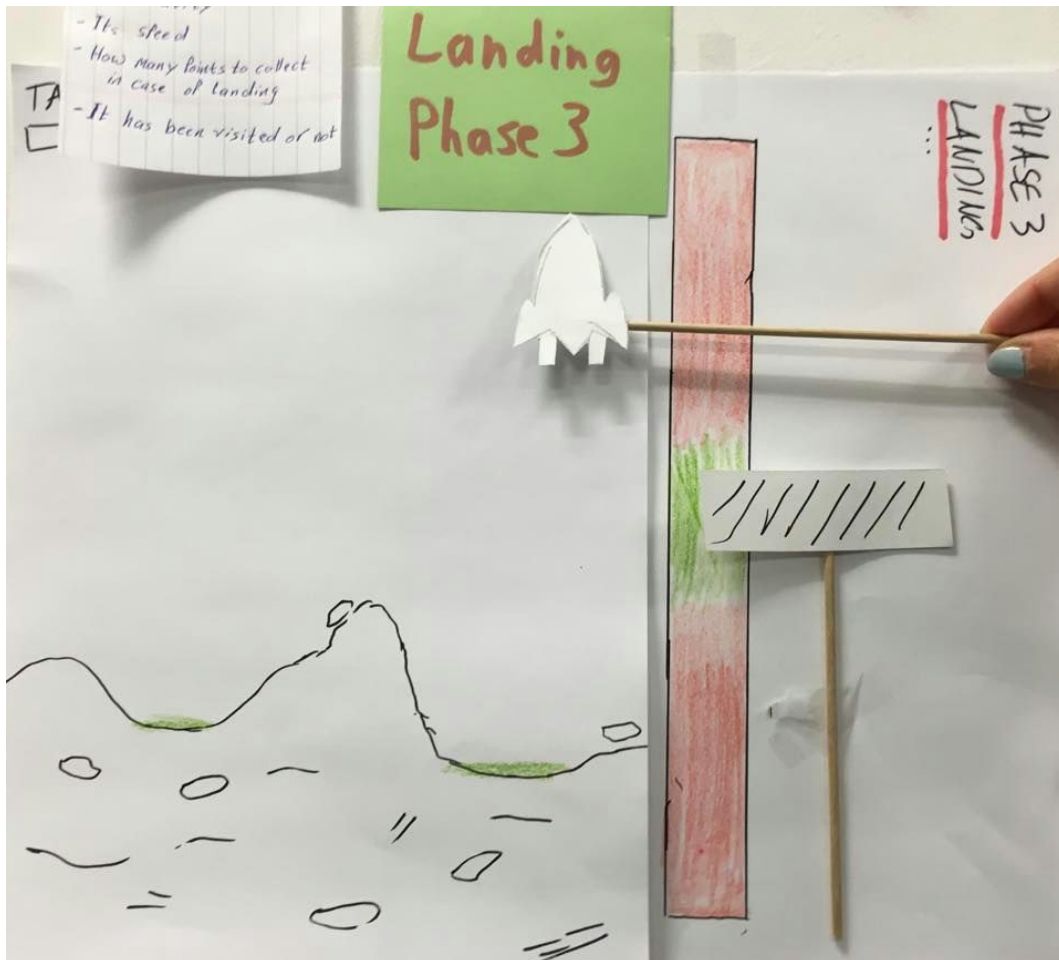
c. Exploration

While doing the exploration on the asteroid, the rover runs on battery. The mission is to find different minerals or knowledge papers in order to improve the spaceship.
The player is able to enhance his rover insofar that it is possible to dig deeper into the surface to get more minerals. For this the drill has to be improved. It is also possible to improve the batteries or add solar cells to the rover. With solar cells, the battery will not be unloaded that fast. In addition, one can also add shields to protect the rover and better tyres or engine. With the different improvements, the exploration phase can be extended and enhanced regarding mineral collection or information gathering.
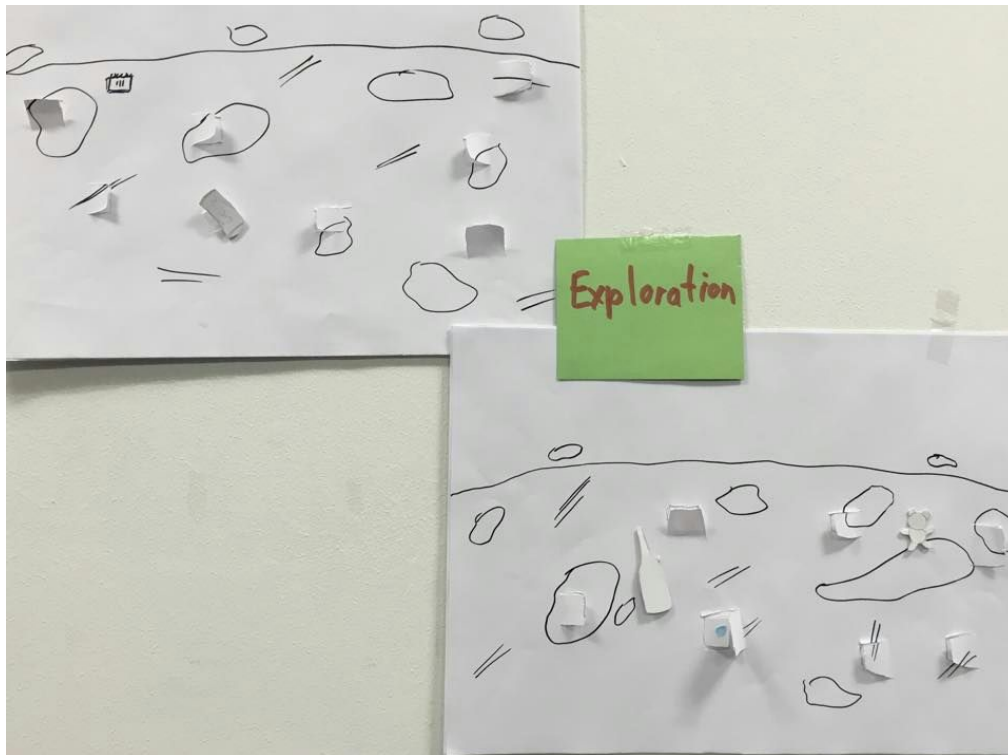
4. Side Gameplay

In case the player finds himself in the space map where he has an overview of the whole space map he can click the menu icon. A menu structured into 'Catalog', 'Badges', 'Settings', 'Quiz' and 'Library' then unfolds. Those subsections will be explained in the following.

a. Catalog

By clicking the menu item 'Catalog' the user gets to a catalog showing all items that can be achieved for upgrading the spaceship. This contains sensors and actuators. When starting the game a number of these items is available to player. This list can be extended throughout the game. The items already at the player's disposal are shown in full colour in the catalog. All others are greyed out.
Each catalog item shows its image on the left and the objects needed to purchase the item on the right. These objects can be minerals, indicating the quantity and the quality of each mineral needed, and or badges needed to enable the item in order to purchase it.

Catalog
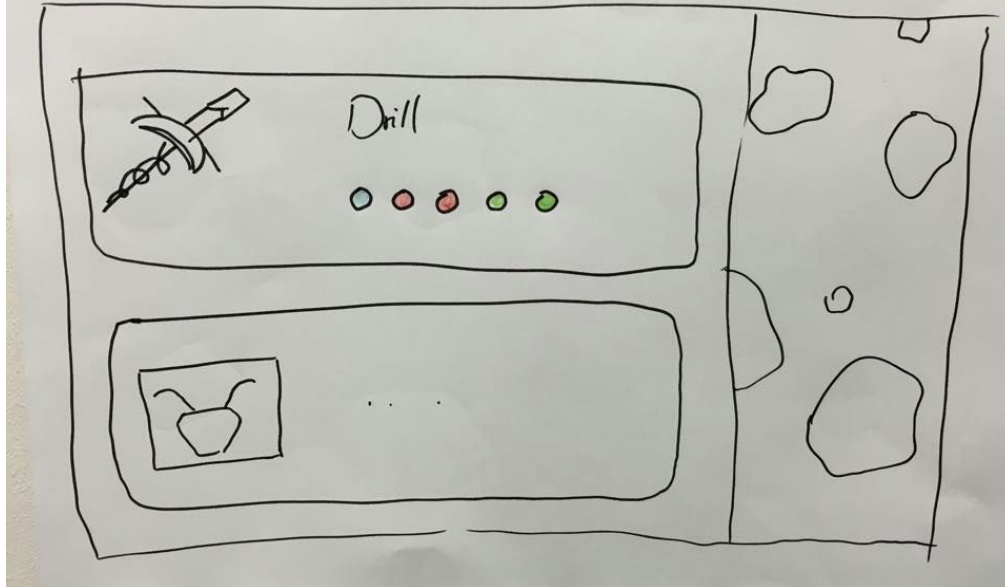
In the following the different items available in the catalog are shown.

detection sensors:
- lidar: improves range in landing phase orbit
- altimeter: improves color value in landing phase orbit
- spectrometer: improves scanning values in overview map popup, which mineral is still on the asteroid, after an upgrade: how many of the minerals are left
- magnetometer: warning of solar storms in exploration phase, signal, when solar storm is near or right before hitting
- telescope: scanning in overview map is also possible from other asteroids/planets
- resource scanner: two upgrade options: increase radius in which you can see resource particles in explo phase and see which resource it is (every material has its own particle color if upgraded)

actuators:
- main engine: overview map and landing phase, improvable, speed increases
- solar-sail: like main engine but a smaller value of increasement
- ion thruster: improves the range of the spaceship to travel, e.g. the neptun is only reachable with this one
- thruster for the spaceship: in landing phase increases swipe speed
- thruster for the hover: in explo phase increases rise height and speed

energy:
- fuel tank: from the beginning, improvable
- fuel tank for hover: for moving
- battery for hover: for drilling and flashlight etc.

- (optional: laser: for exploration or landing phase or in both phases, for destroying debris or rocks)

for exploration:
- drill: for exploration, possible to reach deeper minerals with a better drill
- flashlight: for the hover, in a dark exploration phase necessary, not from the beginning, needs battery
- booster: gives a boost to the hover, (achieved from a succesfull badge)

protection:
- heat shield: on an hot/active/fire asteroid you get less damage if you have this one, not from the beginning
- ice shield: on an ice asteroid you get less damage if you have this one, not from the beginning
- spaceship shield: for landingphase
- kevlar protection shield: for hover, needs energy, maybe not kevlar then, but an energy shield

Prices

	Water	Pyroxenes	Silicates	Olivines	Metal
Point Cloud Generator/Lidar	7	2			
Altimeter	8		1	1	
Spectrometer	6	3	4		
Magnetometer	10		1		
Telescope	5		2		4
Resource Scanner	6	2	3	2	
Main Engine	5		1		
Solar Sail	4	1			
Ion Thruster	8	2		3	
Thruster	6		4		

Spaceship					
Thruster Hover	9		5		
Fuel Tank	7		3		1
Fuel Tank Hover	7		3		1
Battery Hover	7				1
Drill	3	1	0	1	2
Flashlight				3	2
Kevlar Protection Shield	5	8	2		
Spaceship Shield		2			1
Ice Shield	10			5	
Heat Shield	10			5	
refill tank	10	1			
refill battery	10	1			
shield repair	9	1			
shield repair during landing pahse	10	2			

b. Badges

Badges serve an additional motivation feature in the game. The Player will receive them after finishing a collection. For each category there should be a progress bar with sections.

Categories for Badges:

- Crash/Failure:

3x Crash	10x Crash	25x Crash	40x Crash	70x Crash	100x Crash

- Minerals:

3x of each mineral	10x of each mineral	25x of each mineral	40x of each mineral	70x of each mineral	100x of each mineral

- Upgrades:

2x Upgrades	5x Upgrades	10x Upgrades	20x Upgrades	35x Upgrades	50x Upgrades

- Explorations:

5x Exploration	10x Exploration	25x Exploration	40x Exploration	60x Exploration	100x Exploration

- Quiz:

1x Successful Quiz	3x Successful Quiz	6x Successful Quiz	10x Successful Quiz	15x Successful Quiz	30x Successful Quiz

- Distance of Flight:

3 Flights	10 Flights	25 Flights	40 Flights	70 Flights	100 Flights
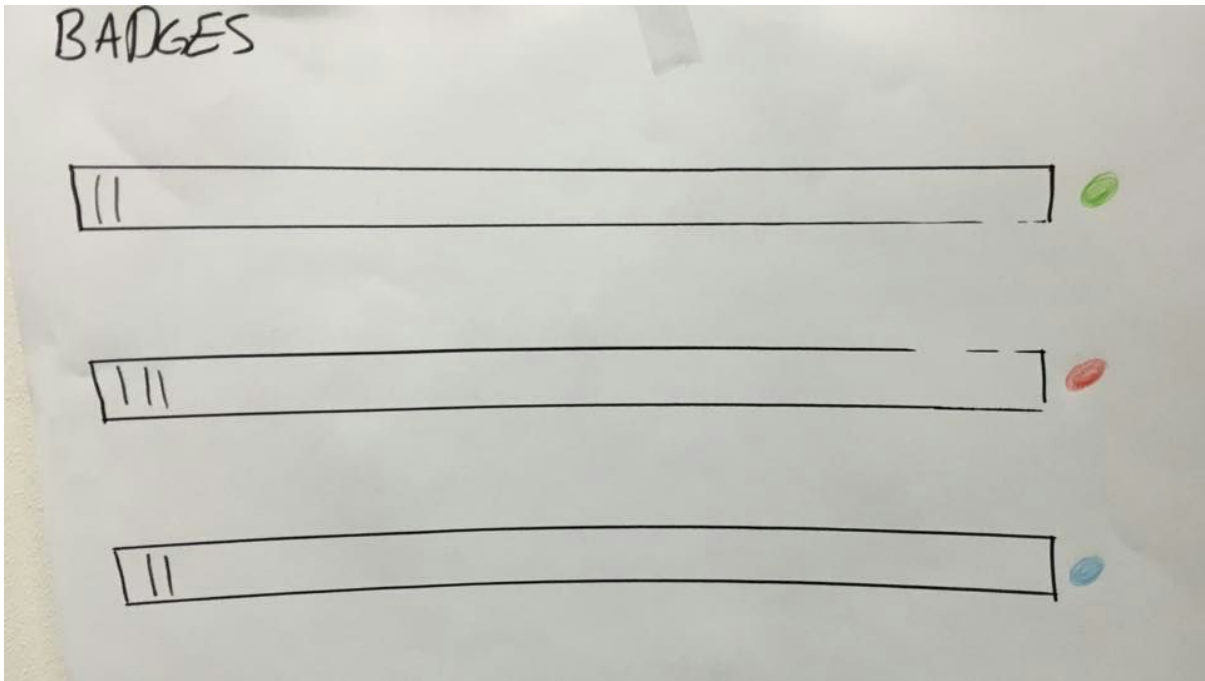
Rewards:

5 Space Coins	7 Space Coins	10 Space Coins	13 Space Coins	16 Space Coins	20 Space Coins

c. Quiz

The quiz can be accessed by clicking the menu item 'Quiz'. The quiz contains questions about the space whose answers can be found by going on asteroid missions through space. The questions are put into sub quizzes each containing 3 questions. Each sub quiz belongs to one of 5 different categories : general space knowledge, general asteroid knowledge, knowledge about specific asteroids and planets, space mission knowledge - like the process and the needed equipment - and physical space knowledge such as the movement of planets or solar winds.
One question usually provides 4 different options to choose from as an answer. Only one of these options is correct.
If all of the 3 questions in the sub quiz are answered correctly the player is rewarded with one « point ». As these points add up he can pursue various badges when the number of points is high enough to enable a particular badge. If one of the 3 questions is answered incorrectly the current quiz is blocked for 10 minutes. Throughout this time the player isn't able to do this particular sub quiz again. He can now go on further space missions to collect the missing knowledge or check in the library if he has already learned about it during former missions. In order to gain a badge the points the player collects should derives from certain categories making sure that not only questions about one type of category are answered, an example could be :

1. Level of badge : 1 quiz of arbitrary category needed
2. Level of badge : 3 quizzes are needed (2 arbitrary, 1 general asteroid)
3. Level of badge : 3 quizzes are needed (1 specific asteroids and planets, 1 general space, 1 general asteroids)
4. Level of badge : 3 quizzes are needed (1 physics, 1 missions, 1 arbitrary)

Questions

- What does the colour of the stars indicate?
    - **their temperature**, their distance, the age of the star, their size

- How many types (colours) of stars are there?
    - **7 types**, 10 types, 3 types, 14 types, 9 types

- What colour does the hottest star have?
    - **Blue**, Yellow, Orange, Red, White, Green

- What colour does the coolest star have?
    - **Red**, White, Yellow, Orange, Purple, Pink

- Dim stars have a low number in the magnitude-scale which means they have:
    - large magnitude, no magnitude, **small magnitude**, various levels of magnitude

- What is the largest planet in our Solar System?
    - **Jupiter**, Saturn, Uranus, Neptune, Mars, Venus

- What does NOT necessarily apply to a planet? It ..
    - orbits the Sun, has a gravitational field, **is orbited by moons**, has cleared its orbital neighbourhood

- What are the outer planets in our solar system called?
    - **Gas Giants**, dwarf planets, Terrestrial Planets, solid planets, rocky Planets

- Which of the following is not a type of planet?
    - **Ring Planets**, Gas Giants, dwarf planets, Terrestrial Planets

- How many types of planets are there?
    - **3**, 6, 8, 5, 4, 9

- Name a dwarf planet.

- - **Pluto**, Mercury, **Ceres**, Vesta

- The Sun sometimes spits out large bursts of plasma known as:
  - solar wind, aurora borealis, cosmic rays, **solar storms**

- **About how much time does it take light from the Sun to get to Earth?**
  - **8 mins**, 62 hours, 4 secs, 54 secs

- All outer planets have:
  - **rings and plenty of moons**, plenty of moons, one ring, one moon each, neither rings nor moons

- How do astronomers sometimes call comets?
  - **dirty snowballs**, shiny rocks, rusty rubble, gloomy pebble, chilly chunks, icy hermits

- Where can you find most of the comets in our solar system?
  - between Sun and Mercury, between Mars and Earth, **in the most distant areas of our solar system**, between galaxies

- What's the name of the glowing halo that extends outward from Comets?
  - comet light, halo, comet gleam, **Coma**, comet blaze

- What are quasars?
  - **star-like objects that have enormous amount of energy**, type of planet, the name of the asteroids in the outer asteroid belt, the name of the largest and hottest stars in space

- What are pulsars?
  - **rapidly spinning neutron star**, protostar with a strong magnetic field, hot compact star about to explode, point of high density dust and gas in space

- What are the most distant objects in the known universe?
  - stars, asteroids, planets, comets, **quasars**, planemos

- What's the origin of black holes?
  - large accumulation of space dust, **massive stars**, imbalance of physical forces, multiple small celestial bodies

- The Milky Way's central core contains a supermassive black hole. It contains the mass of about 2.6 million suns. It's commonly referred to as:
  - **Sagittarius A***, Cassiopeia B*, Pegasus E*, Andromeda B*, Vulpecula D*

- The massive gravitational influence of a black hole distorts space and time in the near neighbourhood. The ... you get ... a black hole, the ... time runs.
  - further … away from .., … slower ...
  - **closer … to .., … slower …**
  - closer … to .., … quicker …
  - further … away from .., … quicker ...

- A black hole sucks in all the matter that's around it.
  - **true**
  - false

- The "point of no return" around a black hole is called:
  - **the "event horizon"**, no escape area, end point, too late zone, infinitum

- The gravity of a black hole is so strong that:
  - nothing can escape except light, **nothing can escape even light**, only big stars can escape, only planets with strong gravity can escape

- Which two planets have no moons?
  - Uranus and Venus, Mars and Neptune, **Mercury and Venus**, Jupiter and Saturn

- Which planet in our solar system has the biggest number of moons?
  - **Jupiter**, Neptune, Venus, Saturn

- What are Galilean satellites?
  - **the 4 largest moons of Jupiter**, the name of Saturn's heaviest moons, all 14 moons of Neptune, the name of Uranus's closest moons

- Comets come in several categories, the most common ones are:
  - **periodic and nonperiodic**, inner comets and outer comets, recovered and unrecovered, antimatter and ordinary matter

- Without the Sun's immense gravitational force, it would end it a huge explosion.
  - **true**
  - false

- Up to how many degrees does the Sun's core reach?
  - 10 thousand °C, 225 thousand °C, 1.2 mio °C, **15 mio °C**

- What is the name of the coloured circle or ring that sometimes appears around the Sun and Moon?
  - rainbow, sun dogs, **Halo**, light pillar, coma

- The shape of the Milky Way galaxy is:
  - **barred spiral galaxy**, spiral galaxy, elliptical galaxy, irregular galaxy, fractal galaxy

- About how old is the Milky Way?
  - half a billion years, 4.4 millions years, **12 billions years**, 1.4 billions years

- What's the Local Group? A group of about
  - **50 galaxies including the Milky Way**, 7 closest star clusters to us, all celestial bodies in the Milky Way, 12 different stellar constellations

- Nebula is an interstellar cloud in outer space that is made up of:
  - (ice and plasma), (dust and helium gas), (**dust, hydrogen, helium gas and plasma**), (only space dust)

- Our moon is moving …...
  1. closer towards Earth, closer towards Mars, **away from Earth**, away from the Sun

- A star's brightness is known as:
  - starlit, **its magnitude**, star light, albedo

- Galaxies are classified according to their shape, this classification system called:
  - **Hubble Sequence**, Cepheid, Irregular Galaxy, Barred Spiral Galaxy

- In which galaxy is our solar system located?

- - **Milky Way**, Andromeda Galaxy, Star Path, White Cosmos

- What's the Milky Way? A …
  - **galaxy**, star cluster, planetary system, stellar constellation, nebula, pulsar

- The largest explosion that takes place in space is the explosion of a star and it's called:
  - the big bang, **supernova**, crab nebula, Pleiades, alpha centauri

- A debris disk is a circumstellar disk of dust and debris in orbit around ...
  - a black hole, asteroids, **mature and young stars**, comets

2- General Asteroid knowledge

- What does the term "Asteroid" mean?
  - **star-like**, rocky body, tiny planet, space dust

- Where would you find most asteroids?
  - **in the asteroid belt**, in the inner solar system, in the giant zone, in the asteroid heap, in the kuiper belt

- Where is the main asteroid belt situated in the solar system?
  - **between Mars-Jupiter**, between Earth-Venus, beyond Neptune, scattered around Mercury, along Jupiter's orbital path

- What kind of asteroids do exist?
  - **Near-earth asteroids**, Near-Venus asteroids, asteroids on the orbit of Saturn asteroids moving against the orbit of Neptune

- What's the asteroid belt beyond Neptune called?
  - **Kuiper belt**, Neptunus belt, Outer asteroid belt, Ianus belt

- Which of these planets accumulates asteroids around it?
  - Venus, Uranus, Pluto, **Jupiter**

- The asteroids that spread around the orbit of Jupiter and Neptune called:
  - **Trojans**, Medusae, Nymphs, Sirens

- The asteroids that spread between Jupiter and Neptune called:
  - **Centaurs**, Fauns, Zyklops, Titans

- What shape does the orbit of an asteroid have?
  - **elliptical**, circular, oval, crescent

- What's a good value for an asteroid's maximum orbit inclination?
  - -10°, 5°, 20°, **35°**

- In which direction(s) do asteroids move?
  - **mostly all into the same direction**, one half forwards, one half backwards, they move into all kinds of directions, clockwise

- How heavy is the mass of the entire asteroid belt estimated to be?
  - **4% of the Moon's mass**, 9% of Pluto's mass, 9% of Mercury's mass, 1% of the Sun's mass

- What's the largest asteroid / dwarf planet in the Solar System?
  - **Ceres**, Vesta, Gigant, Bamberga

- Which percentage regarding the volume does the biggest asteroid in the asteroid belt make up?
  - 50%, **33%**, 25%, 80%

- What are the four biggest asteroids in the main belt that make up half of the mass?
  - **(Ceres, Vesta, Pallas, Hygeia)** ; (Hebe, Juno, Vesta, Pallas) ; (Gigant, Hebe, Pallas, Juno) ; (Hygeia, Gigant, Leda, Vesta)

- What percentage regarding the volume do the four biggest asteroids make up?
  - 98%, **50%**, 32%, 75%

- What part of an asteroid is analysed by identifying its spectrum?
  - **its surface**, its atmosphere, its mantle, its core

- What does spectroscopy tell us about an asteroid?
  - **its chemical composition**, its density, its speed, its age

- What's the asteroid called if it has a sprouted tail from being hit or pummeled by another asteroid?

- - **active asteroid**, collapsed asteroid, silicaceous asteroid, metallic asteroid

- As a result from collisions all asteroids are covered in:
  - ice, **space-dust**, water droplets, thick red and brown clouds, lava

- Water on asteroids is mostly found in the form of
  - water vapour, ice rocks, **layer of ice**, liquid water

- Which material nowadays found on Earth is likely to come from asteroids?
  - diamond, **water**, gold, carbon-dioxide

3- Knowledge about specific asteroids and planets

- Neptune appears blue because it ...
  - is an ice giant, **has methane in its upper atmosphere**, absorbs only blue light from the Sun, contains a thick and slushy fluid mix of water and ammonia

- Which asteroid is one of the few main-belt asteroids whose shape has been determined by ground-based visual observation?
  - **Davida**, Cybele, Europa, Juno, Iris, Interamnia

- Jupiter rotates faster than any other planet, a day on Jupiter is only about:
  - 6 hours long, **10 hours long**, 14 hours long, 23 hours long, 31 hours long

- Ceres is the only object in the asteroid belt known to be:
  - **rounded by its own gravity**, a C-type asteroid, an active asteroid, an M-type asteroid

- What's the average albedo of the Earth?
  - 0.1, **about 0.3,** 0.4, 0.6, 0.7

- The gravitational pull of the comet 67P/Churyumov-Gerasimenko is:
  - **several hundred thousand times weaker than on Earth**, very strong, equivalent to the gravity on Mercury, zero

- Ceres appears to be differentiated into a rocky core and icy mantle.
    - **true**
    - false

- Vesta is the first asteroid to be visited by a spacecraft and also the:
    - **brightest asteroid in the sky**, biggest asteroid in our solar system, first discovered asteroid, only asteroid rounded in shape

- The asteroid Pallas has a very high axial tilt of:
    - 79, 64, 90, **84°**, 58

4- Space mission knowledge

- The first spacecraft that sent a lander to land on a comet in 2014 is called:
    - **Rosetta**, Philae, Luna, Transit 1A, Explorer 7, Deep Space-2 "Scott", Lofti 1

- What's the name of the lander that landed on the comet 67p/Churyumov–Gerasimenko?
    - **Philae**, Spot 4, Mirka, Step 4, Galaxy 1R, Geotail, Viking

- What's the name of the comet that the spacecraft Rosetta orbited and sent a lander to land on it?
    - **67p/Churyumov–Gerasimenko**, La Sagra , Lemmon, Klemola, McMillan

- One of the results of the science research that Philae did on the comet is:
    - **the Earth's water didn't come from comets**, the Earth's water came from comets, the comet has a solid and stable surface, the comet has a strong gravity

- What are the names of the first satellites that were launched into Earth orbit?
    - Viking 1 and Viking 2, Pioneer I and Pioneer II, **Sputnik I and Sputnik II**, Apollo 11, STS-1 and STS-2, Freedom 7 and Aurora 7

- What's the name of the first human to travel into space?

- ○ Neil Armstrong, Buzz Aldrin, **Yuri Gagarin**, David Scott, Pete Conrad, Alan Bean

- The most frequently medications that are used by astronauts are for:
  - ○ **sleep problems, pain, congestion, and allergy**; headache and sleep problems; Toothaches and jaw pain; motion sickness and stomach ache; ear pressure and orientations problems

- What are the names of the first spacecrafts to successfully land on Mars?
  - ○ Mariner 6 and 7, **Viking 1 and Viking 2**, Phoenix 3 and 4, Deep Space 1 and 2, Echo 1 and Echo 2

- The first mission to Mars detected that the planet has:
  - ○ **no evidence of life**, no water, no magnetic field, no polar ice caps

- The name of the mission to Pluto is:
  - ○ Curiosity rover, Space Technology 6, Pioneer P-31, **New Horizons**, Surveyor7

- What's the goal of Pluto's mission?
  - ○ **understand the formation of the Pluto system and the Kuiper belt**, study Pluto's moons, search for evidence of life on Pluto, to obtain high resolution images

- What was the problem that occurred during Philae's landing on the comet?
  - ○ the comet's gravity is very low, **harpoons, gas thruster and anchors were not fired**, so many bright dust grains around the comet, the lander lost communication with the space station

- How long was the spacecraft Rosetta in hibernation?
  - ○ **31 months**, 5 years, 14 months, 10 weeks, 23 weeks

5- Physical space knowledge

- What causes a halo around the sun or moon?
    - **light interacting with ice crystals**, dust grains, water droplets, ammonia crystals, aurora

- The farthest point from the Sun in the orbit of an object is called:
    - dark matter, **Aphelion**, Aerosols, sun dogs, extended region

- The nearest point from the Sun in the orbit of an object is called:
    - **Perihelion**, Nova, phase angle, Aerosols, spectral line

- Most planets rotate on their axes in an anti-clockwise direction, which planet rotates clockwise?
    - Neptune, Mars, **Venus**, Mercury, Uranus

- What does AU stand for?
    - **Astronomical Unit**, Asteroid Unicate, Astronaut in Universe, Albedo of Uranus

- What does the term albedo mean?
    - the name of the star clusters, **the reflecting power of a surface**, the glowing halo surrounding comets, the gamma rays emitted by Pulsars

- The wind that travels off the Sun carries:
    - hot cosmic dust, droplets of molten iron, **charged particles and magnetic clouds**, dark matter

- The trajectory of asteroids:
    - doesn't alter over time, is moving further from the Sun every year, **gradually alter over years**, doesn't get affected by the gravity

- The Earth's magnetic field serves as a shield, redirecting the material of the solar wind:
    - towards the moon, **around the planet so that it streams beyond it**, back to the Sun, forward to the next planet

- When the solar wind carries powerful bursts of radiation into a planet's magnetic field, it can cause the magnetic field on the back side to:
    - **press together**, vanish, decrease its intensity, change its direction

- What does 1 AU measure?
  - distance from the Sun to Mercury, 1 light year, 100 times the diameter of the Sun, **the distance from the Sun to the Earth**

- The gravity of the Sun, moon, other planets, and the three largest asteroids have an effect on the:
  - **trajectory of the asteroids**, volume of the asteroid belt, direction of the comet tail, spin axis orientation of the comets

      d. Library

The menu item 'Library' leads to the Knowledge Library which logically structures all the knowledge that has been collected throughout all space missions at that particular point in time. The knowledge is divided into the 5 categories mentioned earlier : general space knowledge, general asteroid knowledge, knowledge about specific asteroids and planets, space mission knowledge and physical space knowledge.
The library is the place where the player can always check about prior learned knowledge, e.g. When he has forgotten about something that he needs for completing a sub quiz in the quiz.

      e. Settings

The menu item 'Settings' allows the player to adjust game settings such as the volume of music and game effects or resetting the game to an initial state.

5. World

      a. Minerals

- <u>Water:</u> blue colour, ice = 3 minerals, gas = 2 minerals, liquid = 1 mineral

- <u>pyroxenes:</u> purple colour, Jadeit = 5, Spodumen = 4, Augit = 3, Enstatit = 2, Pigeonit = 1

- <u>Olivines:</u> green colour, Peridot = 5, Chrysolith = 4, Forsterit = 3, Tephroit = 2, Fayalit = 1

- Silicates: silver colour, Calcit (Calciumcarbonat) = 5, Siderit (Eisencarbonat) = 4, Azurit = 3, Malachit (Kupfercarbonat)= 2, Magnesit (MgCarbonat) = 1,

- <u>Metals</u>: gold colour, platinum = 5, gold = 4, nickel = 3, iron = 2, magnesium = 1

	Water	Pyroxenes	Olivines	Silicates	Metals
Water	-	3	2	1	1
Pyroxenes	6	-	5	4	2
Olivines	10	5	-	4	3
Silicates	14	9	9	-	4
Metals	20	15	15	13	-

<u>Space Coins - Minerals</u>

	Water	Pyroxenes	Olivines	Silicates	Metals
Space Coin	5	10	15	20	25

    b. Asteroid Information

Pop-up menu

- Name
- Distance
- Active asteroid or not
- Type of surface (topography): large mountains, grooves, craters, steep scarps
- Required tools for landing
- Its gravity (helps by the landing)
- Its speed
- It has been visited by the player before or not

If the player clicks on one of the asteroids a menu will pop up. This menu contains information about that specific asteroid like: the name of the asteroid, how far is it from the spacecraft, whether it is an active asteroid or not. Some of the asteroids are called "active asteroids" if they have sprouted tails from being hit or pummeled by other asteroids, it's the dust or gas that is ejected from their surfaces. Only 13 of these asteroids have been found in the main asteroid belt.

Other important information that are included in the menu are the type of the asteroid's surface (whether there are large mountains, grooves, craters, or steep scarps) in order to help the player to choose the right tool to land on this surface, additionally there is a suggestion of the proper tool for landing.
The menu gives also information about the asteroid's gravity and speed, and the last information tells the player if he has already visited this asteroid or not.

6. Media