4 Alpha release

4.1 Progress Report

We consider ourselves to be well in schedule. Most of the "desirable" and "high" targets are either done or well on their way. After evaluation of our progress and the current game state, we consider only the following points still need to be done (unless playtesting shows otherwise):

- Improvements for sound effects and background music.
- More game modes (or improvements of the current ones)
- General balancing according to playtesting feedback.
- Ensure high performance and stability
- More planet designs

4.2 Specific Achievements

4.2.1 On the visual side

Gravity visualisation (aka. star dust)

The global gravity field is now visualised using 5000 particles that are transformed on the GPU. Because our gravity field may change over time, the properties of these particles need to be updated as well. This part happens on the CPU. To conserve computing resources, only a fraction of all particles are updated each frame.

Message bubbles

We implemented a framework to display messages to the individual players in the form of speech bubbles. These are used to inform the player of events such as item pickups or leaving the playing field.

Planet backgrounds

Each planet (even a completely destroyed one) now has a background, which helps to visualise the presence of the undestroyed second hemisphere of the planet. This also justifies the remaining gravity effects.

3D models

We added some more 3D models to the game. For example for certain weapons and collectables.

We did our best to assure that our graphics are independent of the chosen screen resolution. We support three resolutions: 480p, 720p and 1080p.

4.2.2 On the gameplay side

More items

We added some new items and changed the behavior of existing ones. The new items include a cluster rocket launcher that shoots very unpredictable rockets that split into multiple new (and just as unpredictable) rockets. Another addition are homing rockets that track the nearest enemy. We also added a laser turret that can be dropped onto a planet. Once landed, it provides support fire for the player. Lastly, something we call "Big Bad Laser" is currently a work-in-progress.

The already existing "remote triggered rockets" received an overhaul both in behavior and visuals. They are now considered grenades that don't explode on impact, and are a lot more bouncy. This way, the gravity influence on them is much more important (and visually appealing). They still can (and should) be remotely triggered, but the controls to do so have changed: Before, you had to use two different buttons to either fire or detonate them. Now, you use the same button for these actions, but a long press results in the detonation. We hope that this simplifies the use of such secondary actions.

Game modes

Giving the players a selection of multiple game modes necessitated the introduction of an additional "game mode selection screen", which additionally lists a short introduction for each game mode (see screenshot below). The default "deathmatch", which has been the main target of implementation so far, is completed, and shows a "Game Over" screen which declares one of the players the winner of the round. A few other game modes are still work-in-progress, and depending on the difficulty of implementation, might not be included in further versions of the game.

Rumble (Force Feedback)

As many items on screen explode and/or cause damage to players' ships without the immediate visual feedback of a health bar, we introduced Rumble (i.e. vibration of the players' controllers) on most explosion effects. As we are not sure of the relative strength of rumble in the hands of different playtesters, we also introduced a setting to turn Rumble off globally.

Balancing

As in every iteration of this project, we kept on tweaking constants to improve the feel of our game, e.g. how each collision damages scene objects, depending on the pair of types of collidable items. This way, we try to ensure maximum fairness and a plethora of strategies, by making sure that there are no strictly dominant strategies such as "bombard the other players with space chunks".

4.2.3 On any other side

Player selection screen

Players can now try out all the control schemes before the round starts, while they are selecting the number of players. This way, we try to make sure that the first seconds of gameplay don't result in every player wildly pushing arbitrary buttons. See screenshot below.

Sound effects & music

As development of all components is not yet complete, we have only added sound effects to completely finished items such as the homing rockets, or the main menu. As we introduce new items, the corresponding sound effects will be added.

Help screen

We introduced a help screen that is accessible by pressing the "Back" button on the Xbox controller. It displays a scrollable slideshow of helpful images. This set of images may be extended in the future, according to playtesting results.

Performance improvements

The version of our game at the time of the intermediate report showed some performance problems. We improved on this in multiple ways: First, we removed some unnecessary collision checks completely (such as collectibles-laser shots). Second, objects on a planet surface enter a "landed" state, which also deactivates some collision checks and physics computations for them. Third, planets are now split in multiple components right from the beginning. This results in less polyline complexity per component and thus reduces computation cost for destruction, triangulation and intersection computations.

4.2   Screenshots

Fig 4.1: Screen to configure item spawn rates.

Fig 4.2: Player selection screen. The players can also try out the three different control schemes.

Fig 4.3: The game mode selection screen. Still short of a background.

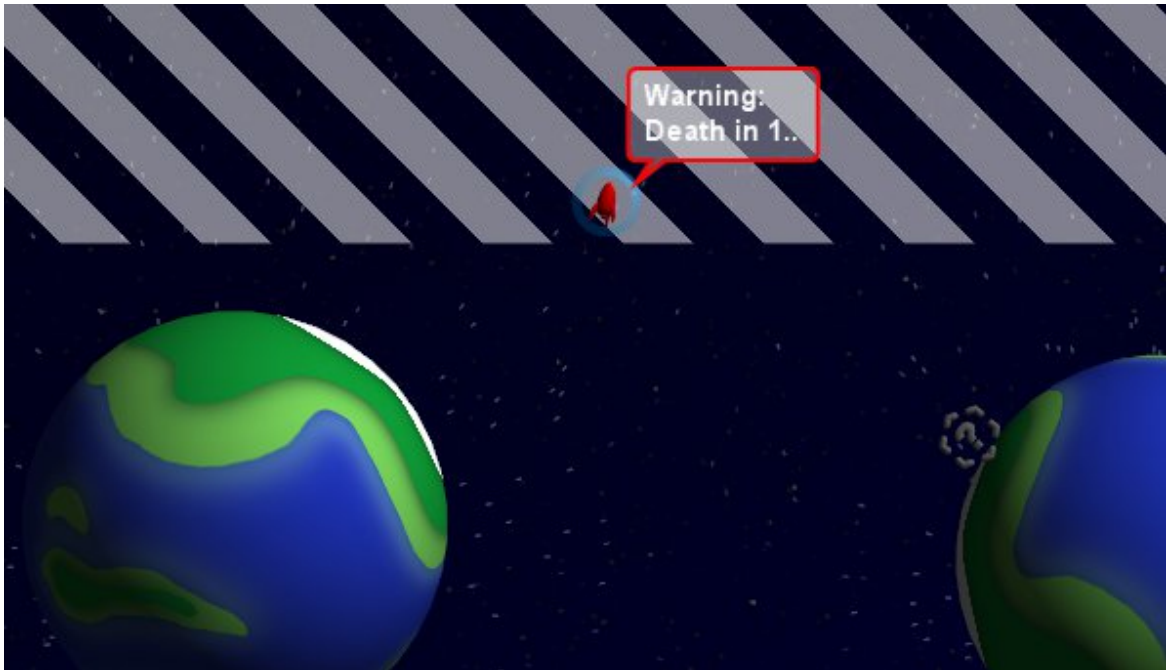

Fig 4.4: Example of the speech bubbles in action.

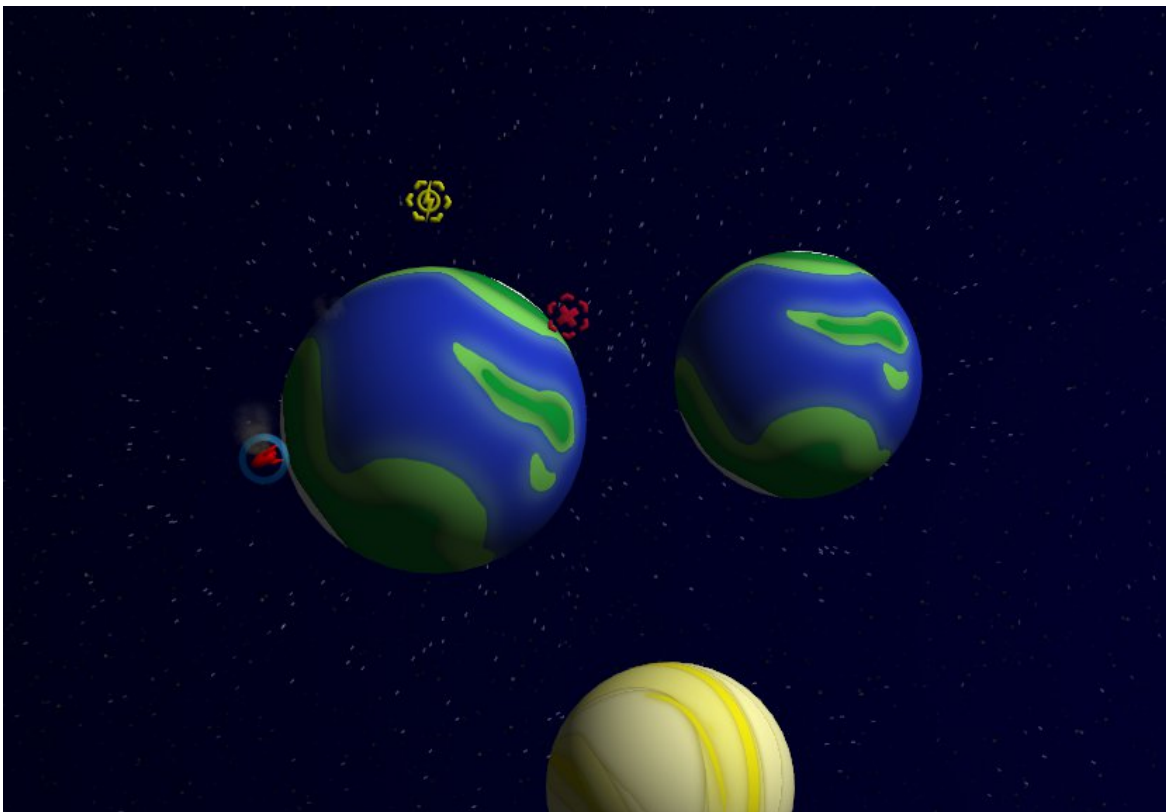*Fig 4.5: Speech bubbles also warn you of your impending doom.*

Fig 4.6: "Space dust" gravity field visualisation and new representation of collectible items all in one. The red health collectible is resting on the planet, and removed from some physics simulation for performance reasons.
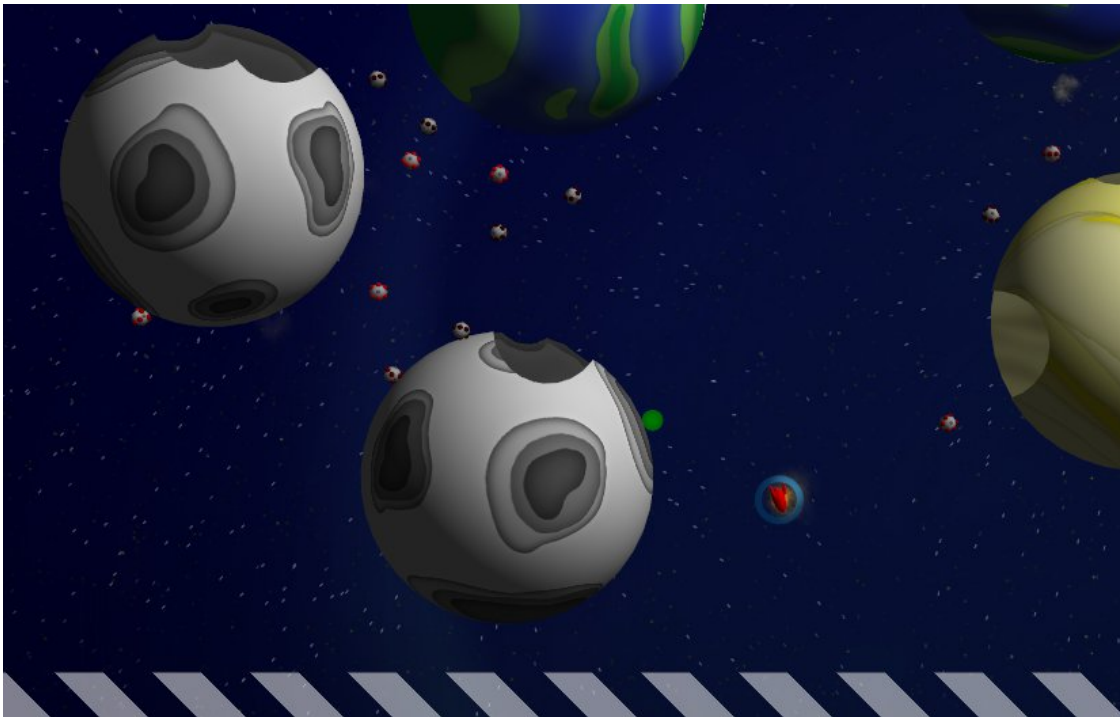
Fig 4.7: Former "remote triggered rockets" now behave more like mines, and are very bouncy. As you can see, the red player is dangerously close to damaging his own ship on detonation.
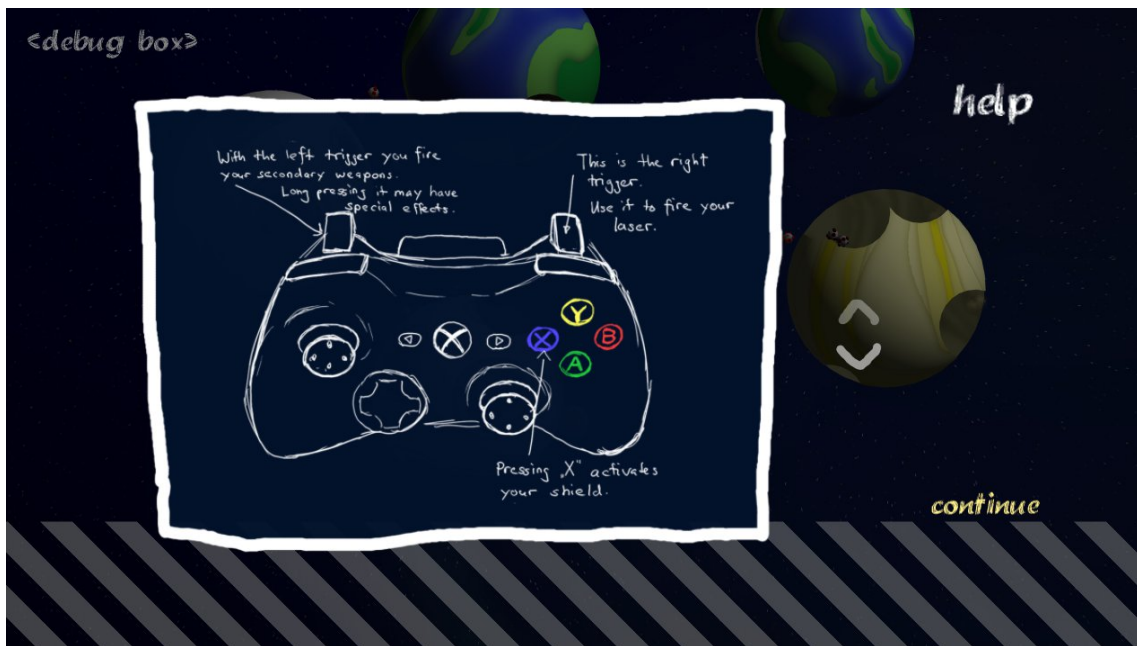

Fig 4.8: First slide of the help screen. Arrows to the right indicate that players can press "down" (but not up) to select the next slide.