

The Space debris
awareness game...

CLEAR 'EM UP
PITCH



The Genre and Themes

- Shoot 'em up
- Autoscroller
- Bullet Hell
- Space
- Time Attack
- Environmental Awareness

Environmental Message

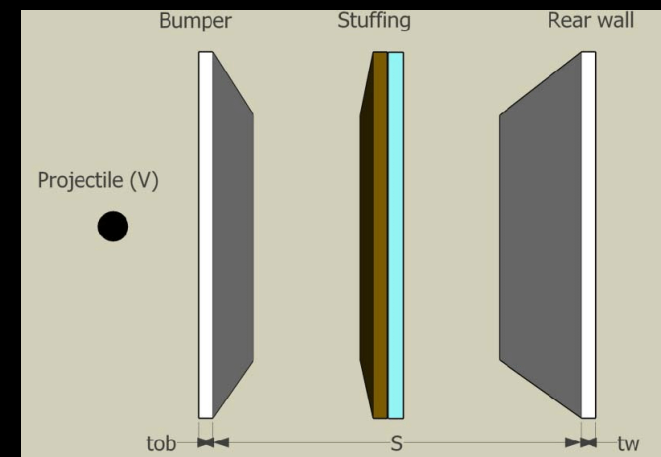
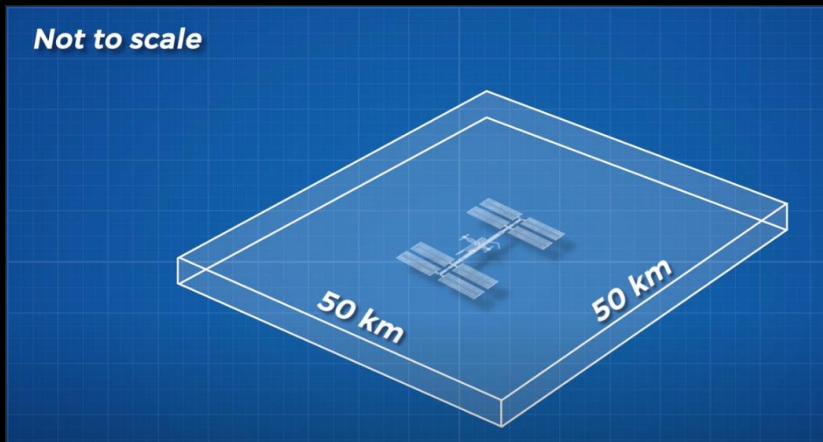
Space Junk, what is it?

It is real phenomenon of space debris caused from previous space missions and retired satellites. Around Earth's orbit right now, there's estimates of over 30,000 soft ball sized pieces space debris travelling around our orbit at 18,000 miles per hour. These are dangerous enough for the International Space Station to make special preparations to avoid these object. And there are millions more objects in smaller paint chip size quantities out in our orbit.

What are the solutions?

Scientists think that space debris is still a manageable issue, but as we send thousands of more satellites in our foreseeable future, it could become a very difficult and dangerous issue for future generations to handle.

Currently right now the ISS (International Space Station) already has special equipment and procedures in place to handle incoming collisions. These include Whipple Shields and making preventative boosts by detecting passing debris in an exclusion zone around the site. These types of measures will be commonplace for future space missions unless we start acting now.



The Synopsis

The year is 2050, earth's orbit has been completely laced with millions of collected scrap from our century of space exploration. You're on a one-man mission to clear a path through the orbit for other space craft to pass through, if a single piece of debris collides with the ship, it will shatter, and the mission will be a failure.

What are SHMUPs?

Shoot 'em Ups, what are they?

Shoot 'em ups, or 'shmups' is a term that can be meaningless on its own as there are many games that can encompass that name. But for this game it falls in-line with classic space shooters from the arcade.

The player moves along a constant linear axis, either upwards or sideways. Shooting at an increasing volume of obstacles or AI flying towards them from the opposite end of the screen.

Emphasis on Action

The player fragility, with any piece of debris being able to destroy the ship in one hit, means the player will constantly be trying to playthrough the same encounters again and again in a repetitious cycle. There should be as little downtime caused by the menus as possible, with a single press the player should instantly spawn back in at the start.



Obstacle Design

Instead of shooting aliens or asteroids, the player will be firing on pieces of debris. There are four tiers of space junk in the game, higher tiers correlate with the size of the junk. Tier 3 would consist of satellites, 4 of rocket ship parts. When destroyed these objects will break off into smaller tier pieces.

(1) Tier 4 > (4) Tier 3

(1) Tier 3 > (4) Tier 2

(1) Tier 2 > (4) Tier 1



Tier 4

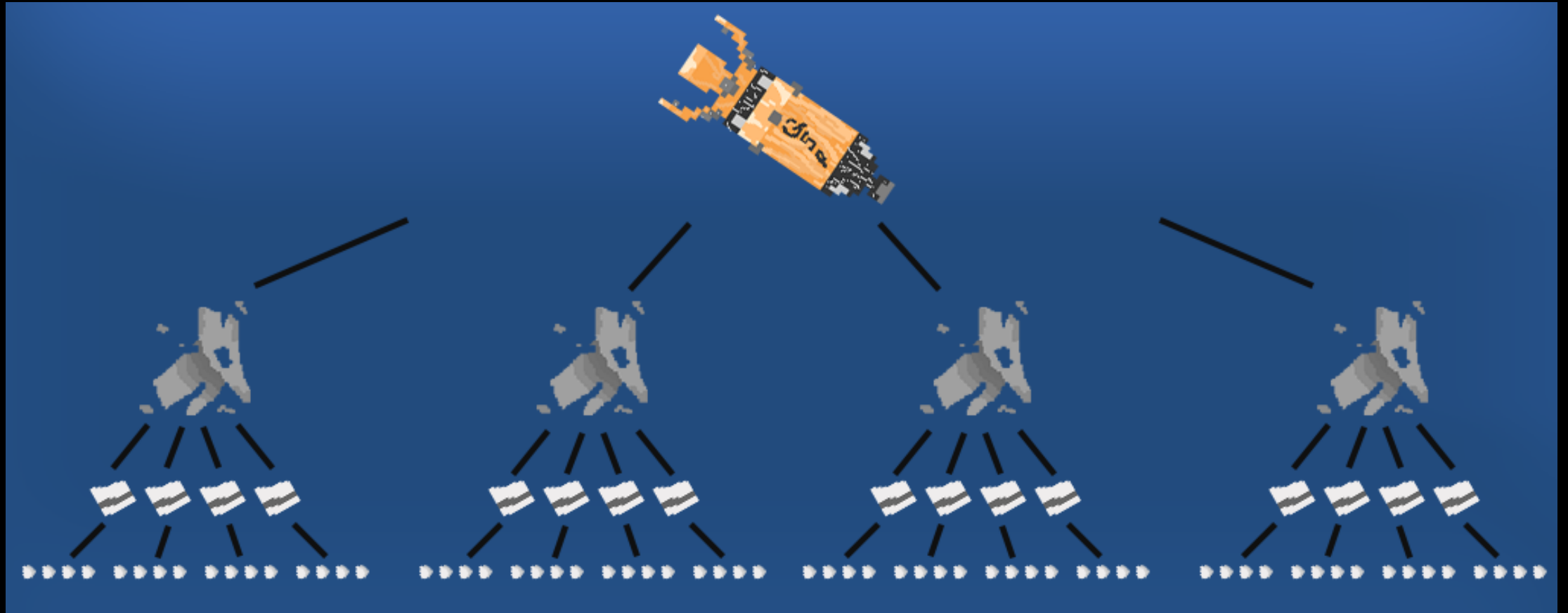


Tier 3



Tier 1-2

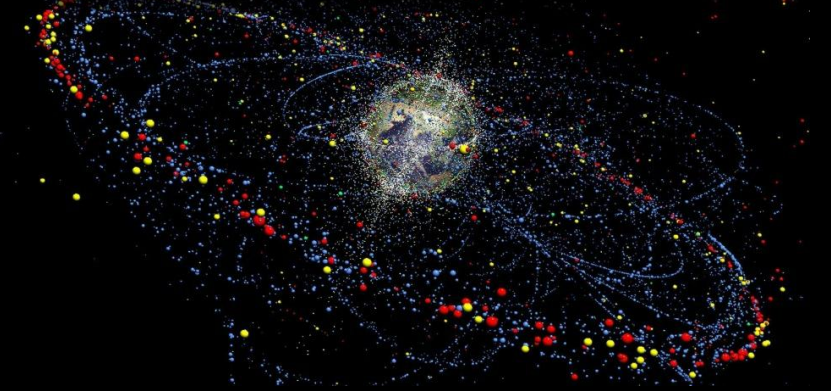
Junk Tiers



The Kessler Syndrome

The Kessler effect, or times referred to as the Kessler Syndrome, hypothesis's that if enough space debris becomes too abundant then collision between all this debris will create a cascade effect. This cascade effect of debris flying everywhere smashing into each other creates even more debris at accelerated rate, creating a metal cage around our planet that poses a serious threat to satellites and space equipment in orbit.

This is a map showing humanity's litterbug tendency... also known as the number of (known) man-made debris that currently orbits the Earth.



Potential Mechanic?

Space junk tiers above 1 have the risk of colliding with each other, when collision does happen, many tiny pieces of spree will be created, making less room for the plane to safely maneuver.

The Basic Weapons

The Player has a basic arsenal in this game. There are three main weapons and two one-time use abilities to help the player out in a pinch, mostly based off real methods scientists are considering to deal with the space debris crisis:

The base weapons:

- The Laser. A low damage beam that burns away the debris into harmless ash.
- The Triple Laser. An upgraded version of the regular laser, used for dealing with larger collections of debris.
- The Net. For larger space junk in the tier 3-4 range, the player can grapple it with a net and redirect it towards the surface of earth where it will safely burn up in the atmosphere.



The Power Weapons

These one-time tool are tied more to player enjoyment and game balance, than realistic solutions to solve the issue for space junk.

- The Laser Broom. This is a technology being researched by Electro Orbit Systems, where they're looking into laser systems created on the surface of our planet that will aim lasers at debris in the sky and burn it.
- The Bomb. Starting with 3, the small nuclear warhead will fire in a linear arc in-front of the player, when it collides with any object a huge circular fireball, that will linger for a few seconds. The player will vaporize if also caught in the blast radius so use with caution.



Visual Style

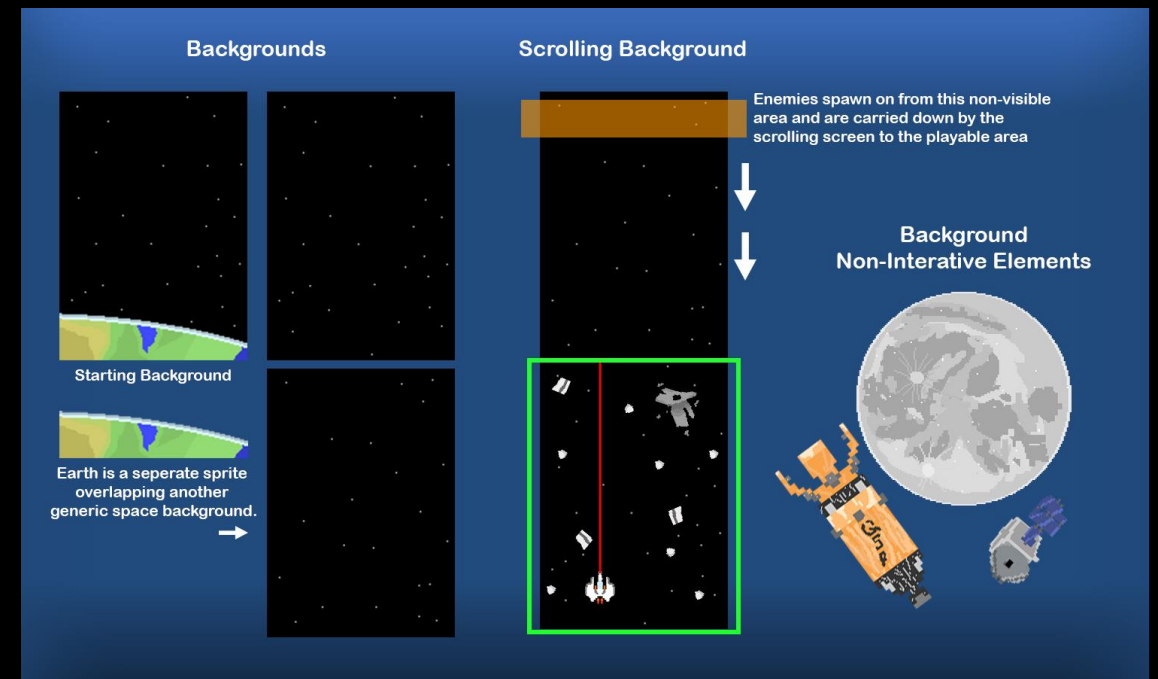
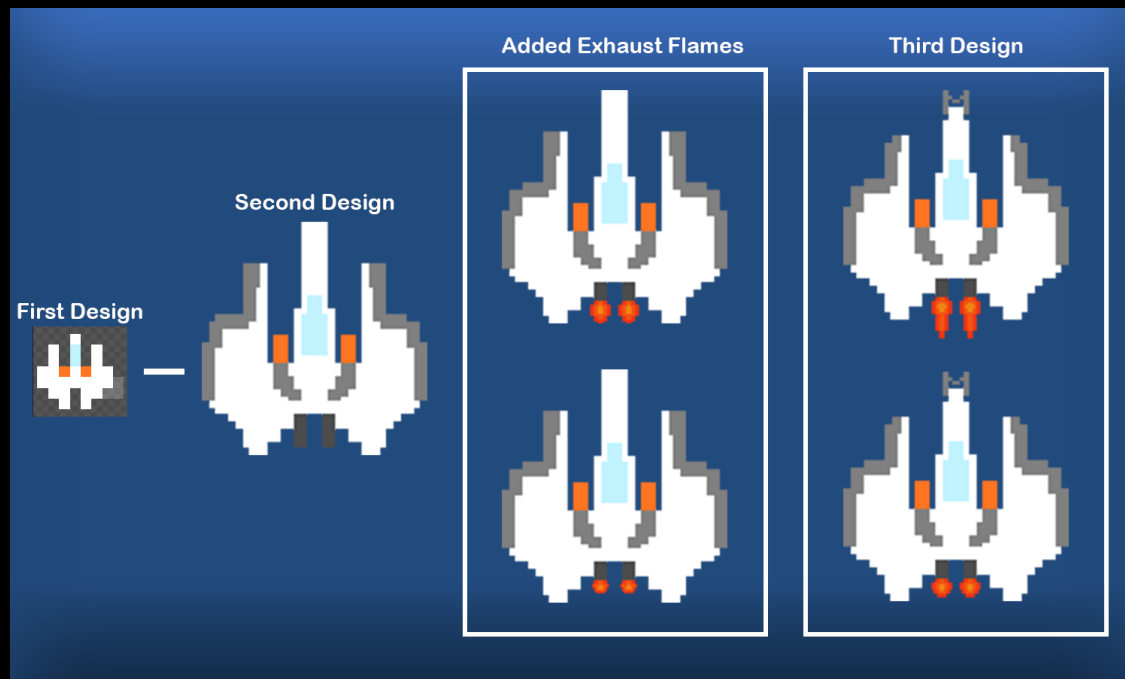
For budgetary reasons, this game reaches for a pixel style reminiscent of old arcade games, a lot of which were space themed, so the style is appropriate.

The simplistic pixel art style is synonymous with these SHMUP games, so the stylistic choice shouldn't be an issue with general audiences or the niche community that plays these games.



Visual Style

These are the assets I've made for the project so far, and will probably be most assets created for this project because creating unique and intricate sprites for what's supposed to be space junk is a bit of a time waster.



Game Start Menu

Here are some examples of start menus in similar games:

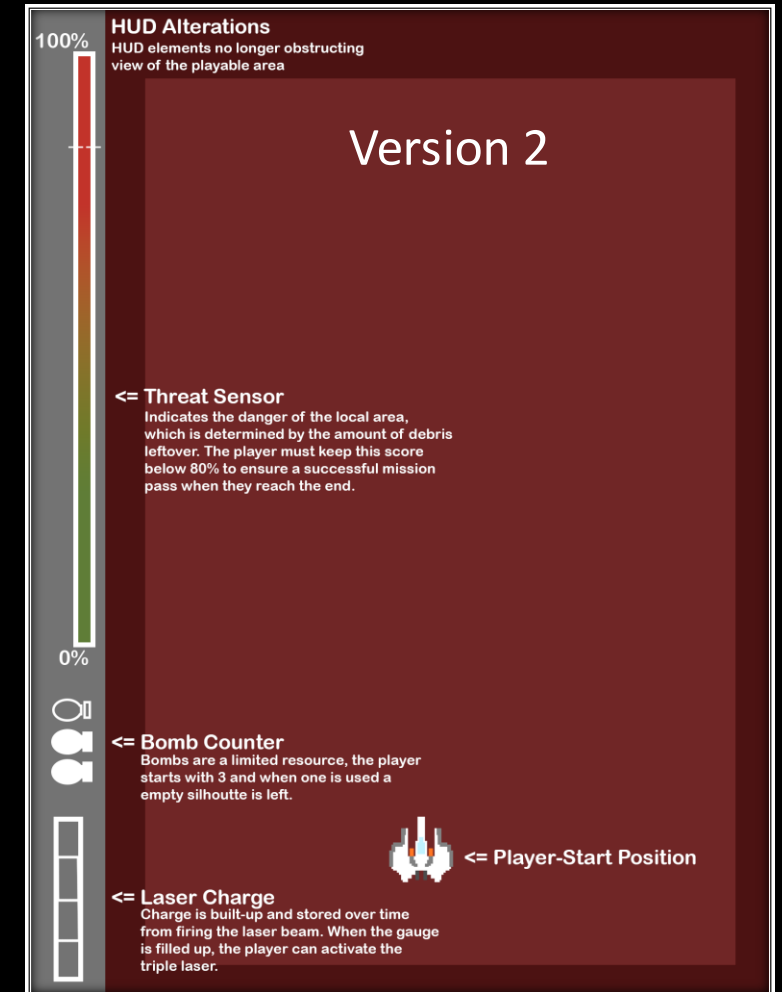


Game UI and UX

SHMUPs games, beyond the main menu are known to have a distinct lack of HUD or minimal.

With mechanics like weapon charge and threat sensor, extra HUD elements would be necessary. Covering up the screen could potentially lead to player frustration, so I moved all HUD elements to its own section.

UI Wireframes



Engagement Over Ham-Fisted

From how I have focused on gameplay mechanics, design and how they're related to real world elements and solutions to getting rid of space junk. I want to completely avoid intrusive splash screens that explain how serious the situation is or warn the player with manipulative messages on the severity whenever they die.

For one, interrupting the gameplay with splash screen breaks the momentum and takes the player out of the experience than it does immerse them. Two, whacking the player with the environment message when they fail unintentionally makes the player correlate awareness with the negative experience of failing.

Lecturing the players by talking down to them like they're idiots will make them tune out rather than in. The gameplay should by itself warn players, create a memorable experience that lets the player's own intelligence come to its own conclusion on how much they should care about the environmental issue.



Intended Audience and Accessibility

The uncomplicated design of the game means that its as easy as “pick-it-up-and-play”, anyone should be able to play the game and the simple pixel graphics of the game should make it playable on any modern device.



Reaching the Message Out

Putting the game on “lunch break” websites that kids play during lunchbreak or when the teacher is not looking in IT class. The arcade style means everyone always starts on an equal plane and how far each kid progresses is purely dependent on skill. Through bragging about how far they got into the game, or how much space stuff they blew up, the kids will learn about the fun of the game will speak for itself and become more popular.

Teachers can also use the game as an easy learning tool, the core game’s prioritization on fun keeps the kids engaged while the visual art elements and subtext of the game gives the teacher the necessary grounds to explain about space debris phenomenon, maybe inspire a class activity for the kids to think of solutions to clean up our atmosphere.

