A TINY CRISIS IN SPACE

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GAME PROPOSAL

GAME DESCRIPTION

"A Tiny Crisis in Space" is a Third-Person Shooter in which four players must cooperate to defend their bases against waves of AI-controlled enemies. To further incorporate the course theme, "Together", their main means of accomplishing this (besides shooting) is to merge with another player. This fused form is stronger, yet can only be in one place at a time and must be controlled together. Players therefore have to coordinate – not only to control the fused form but also to decide when to merge and when to (literally) split up.
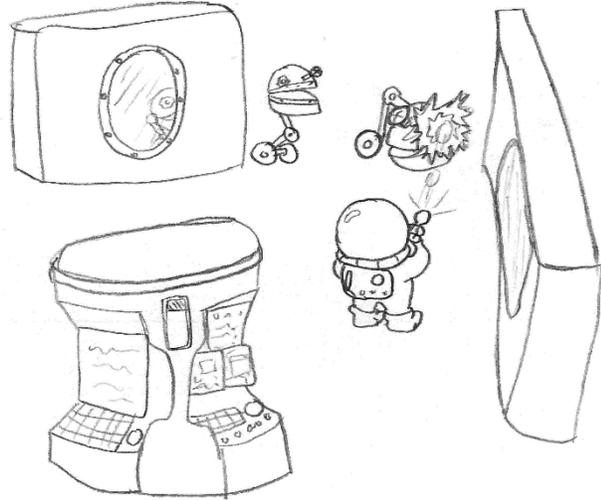

SETTING
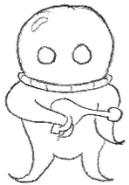
The players assume the roles of alien astronauts who are having a tiny bit of a crisis aboard their space station. The board computer has been infected by a malicious virus, causing it to go haywire and send out a multitude of robots to destroy the control panels. The players must defend these control panels while they perform an anti-virus scan to identify and eliminate the source of the board computer's malfunction.

OBJECTIVES AND GAME STRUCTURE

Within the game, the anti-virus scan translates to a timer. If the players can keep the enemies from destroying any control panels until the timer runs out, they win the game. Consequently, the game is lost if any of the control panels are destroyed. Additionally, enemies can also attack the players themselves, damaging and (if they are low enough) "downing" them. If all players are down at the same time, the game is also lost. To increase pressure, enemies will spawn more frequently and in greater number as the timer ticks down.

In some rounds, a secondary objective must be achieved in addition to protecting the control panels to win. Here, each panel requires three randomized robot parts to complete the scan. Each robot has a chance to drop a part specific to the robot's type upon defeat and the players must carry these back to the control panels. Only one such part can be carried at a time to discourage hoarding and encourage multiple players to cooperate in the part collection. This secondary objective is intended to get players to move away from the control panels instead of always staying close to them.
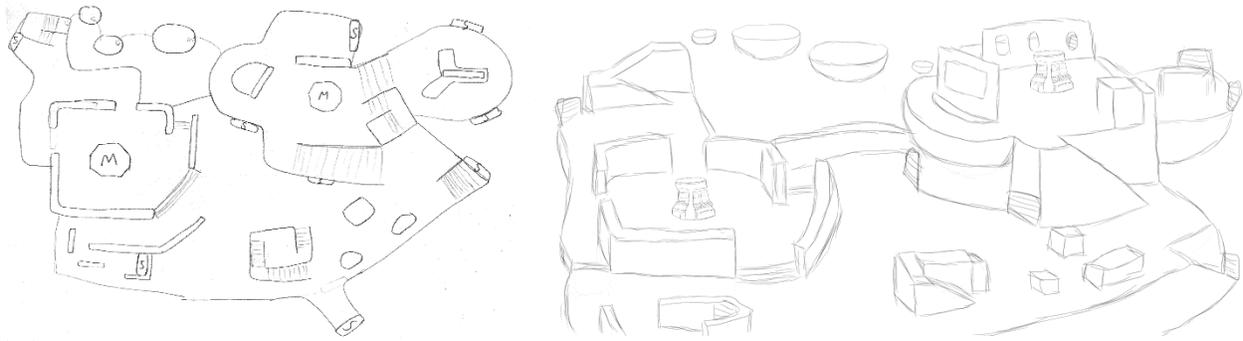
The space station's map design should include at least two control panels in different locations. This would require players to coordinate and split up to defend them both. This is necessary so that players cannot simply run around in their more powerful merged form all the time.

MECHANICS / PLAYER ACTIONS

Individually, each player can shoot, run around and jump. If moving while shooting, the player will strafe, moving at a reduced speed. This discourages shooting permanently without completely disabling the player.
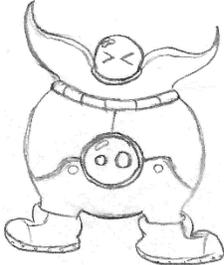
To merge, two players must stand within a small radius of each other and press a dedicated merge button. After the transformation, they will be in control of different parts of the same character. In this fused form, the players cannot shoot but instead throw powerful explosives. They must work together to adjust the trajectory. The bottom player controls the movement of the body while the top player can turn and aim independently. Both therefore have influence over where the explosives will land. Each player additionally controls one arm to throw with.

If a player is "downed" they can be revived by other players by standing beside them for a small duration. This again encourages cooperation between the players. It also prevents the game from becoming an experience where only one or two players remain and the others have to watch (which would very much go against the theme of "Together").

Lastly, even though players are expected to be in the same room or use a voice chat service while playing the game, they should be able to communicate within the game in some form. The players will thus have the ability to "ping" their location, making it visible as a beacon to their teammates.
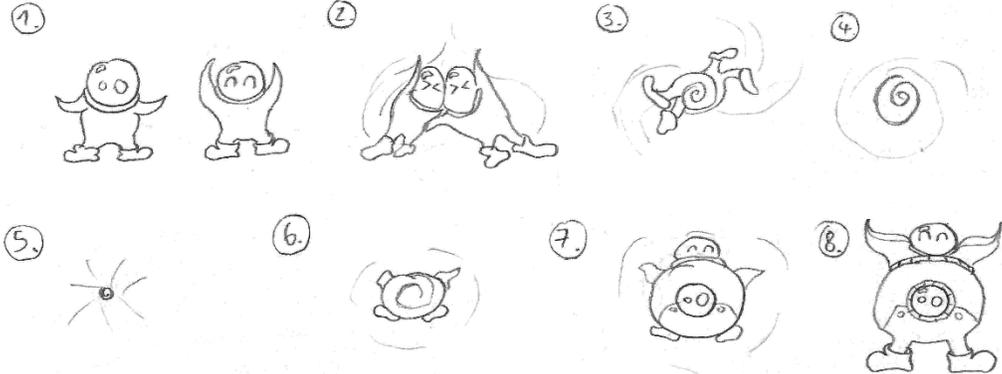
ENEMIES

The robot enemies target a specific control panel when spawned. If a player comes within their range and they are not yet too close to the panel, they will instead start chasing the player. If the chased player is too far away they will re-target the closest panel. To start with, we intend to implement three different types of enemies.
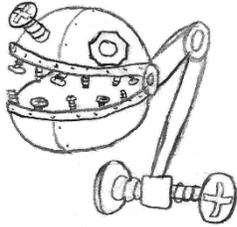

The basic enemies should be the most common and easy to defeat. Individual players can defeat them by simply repeatedly shooting at them. In fused state, they are even easier to dispatch. However, they could still overwhelm players due to their numbers. Basic enemies can only attack at close range. To increase variety, these could come in varying sizes with different speeds and health points to match.

The first special enemy can only be defeated by throwing an explosive into the opening in its head in fused form. This robot therefore requires players who are spread up to communicate and group up. It also poses a much more significant threat compared to basic enemies as it can shoot homing missiles at a medium range.
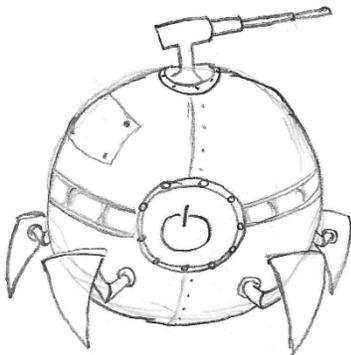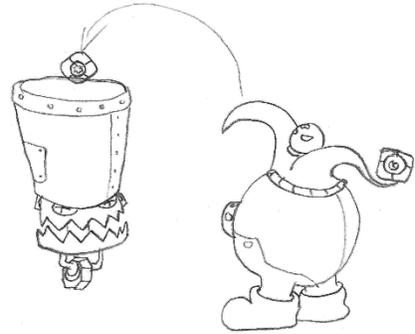
The second special enemy can be considered the opposite of the first as it requires players to split up if fused. This is due to the fact that it can only be defeated by shooting the power buttons on its front and back at roughly the same time. To attack players or the control panels, this robot can shoot a laser beam from the cannon at its top.

These enemies encourage the use of both fused and individual forms.
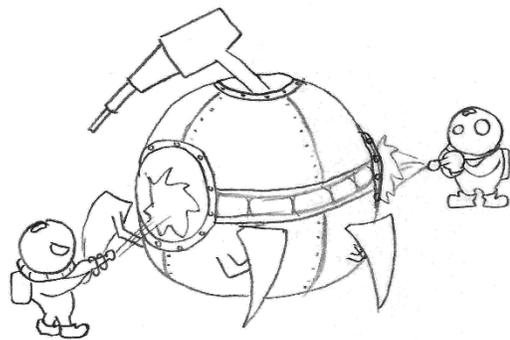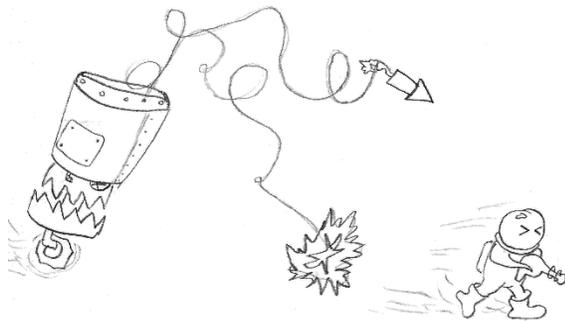
TECHNICAL ACHIEVEMENT

We intend to implement the game using the Unity game engine. Unity provides a lot of functionality such as AI agent path finding and basic networking already. However, there is still a significant technical effort involved in adapting these features to our game. For example, though there is functionality for third person character movement provided, this has to be heavily customized to make for a suitable player controller for our game.
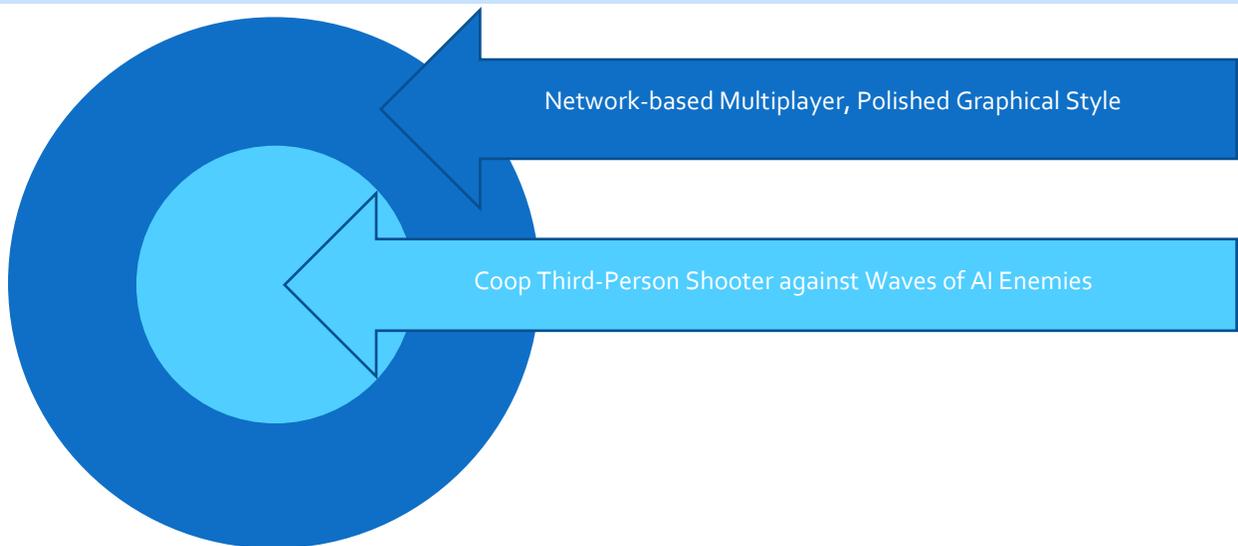
NETWORKING

Since the game is intended for four players with four different viewpoints, the best solution is to play at different PCs. Our primary technical challenge will therefore be to implement network-based multiplayer. There are several factors making this more difficult. Firstly, the game is going to be rather fast-paced. This means that the network code must ensure responsive, consistent behavior of all interactable elements within very short time frames. Secondly, the fused form will be challenging to implement since two inputs from different machines will be used to control the same character. As such, movement cannot only be handled client-side and sent to the server for verification.

GRAPHICAL STYLE

Our secondary focus will be to give the game a unique, polished look. Though much of this is more of an artistic challenge, there are certainly several technical challenges involved. For example, animations need to be synced to character movement to avoid issues such as a character's feet "sliding" on the ground. Custom shaders must also be implemented for some effects such as Rim Lighting.

BIG IDEA BULLSEYE

Network-based Multiplayer, Polished Graphical Style

Coop Third-Person Shooter against Waves of AI Enemies

DEVELOPMENT SCHEDULE

LAYERED DEVELOPMENT TARGETS

Below the features that must be implemented for each layered target are specified. Note that each subsequent layer assumes that all functionality from previous layers has already been completed.

FUNCTIONAL MINIMUM

- Third Person Character Movement and Camera
- Shooting Mechanic and Third Person Aiming
- Enemies that Spawn, Move, somehow damage the Player and Objective and can be defeated
- Win and Lose Conditions (e.g. Player Health, Game Timer and Control Panel Health)
- A basic Level / Map (sort of a test level)

LOW TARGET

- Networking-based Multiplayer
- Merge Mechanic and Coordination-based Movement of the Merged Character
- 3D Art for Basic Enemy and Player Characters (Models, Animations, Textures)
- Basic 3D Environment Art
- Game Manager that spawns enemies in pre-determined waves
- An actual Map (i.e. where some thought went into the design, both visually and from a gameplay perspective)
- Basic sound effects
- Basic Game Menu

DESIRABLE TARGET

- Additional Enemies: 1 Enemy that can only be defeated in merged form, 1 Enemy that can only be defeated when positioned in two different spots
- Attack patterns for the new Enemies that make them different (i.e. 1 enemy that shoots a laser, 1 enemy that fires homing missiles)
- More Detailed Environment Art (Props)
- Visual Effects (that are not just placeholders) for Projectiles, Impacts, Explosions, etc.
- Ability to "ping" your current location for other players to see
- Custom Music (1 Background Music Track) + Improved SFX
- A more polished Game Menu

HIGH TARGET

- Secondary Goal (Enemies drop parts that must be carried towards the correct Control Panel)
- Objects which make the map more interesting: Trampolines, Zip-Lines, See-Saw Catapult, etc.
- Improved Game Manager that spawns Enemy Waves in a randomized way depending on a difficulty level and game timer
- More Background Music

EXTRAS

- Multiple Merges: Depending on which players merge, the resulting fusion is different (different way of moving, different weapon)
- Corresponding Enemies that require specific merge-abilities to defeat
- Multiple Maps

- Events that sometimes change the way a wave plays out: E.g. Lowered Gravity, Enemy frenzy (faster movement), A special Boss Enemy which requires all players to coordinate more than normal to defeat, Moving Control Panels, etc.
- Matchmaking / Lobbies

TIMELINE

See Attachment. Colors correspond to the team member (primarily) assigned to the task.

■ Everyone ■ Robert ■ Jean-Luc ■ Manuel ■ Laura

ASSESSMENT

"A Tiny Crisis in Space" is intended as a game which a group of friends plays (preferably while somehow able to simultaneously talk to one another). Even though the shooting gameplay itself should be fun, what sets this game apart and makes it cool is the requirement to work together and coordinate. The players should feel a sense of teamwork as they purposefully split up to cover different parts of the map or literally combine their abilities to take down immediate threats.

Our design goal is therefore to create situations in the game which require coordination, communication and teamwork. It is also important that these situations can neither be solved by always sticking together nor by every player "doing their own thing" but by alternating between the two.

Due to a comic-like aesthetic the game should be playable by all ages. However, a certain level of dexterity and quick thinking will be needed in addition to the aforementioned coordination skills to succeed at the game.

ADDITIONAL CONCEPT SKETCHES