



COMMERCIAL GAME DEVELOPMENT PROCESS

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Section A) Game Design

A1.1 High Concept

A top-down, networked multiplayer arena shooter in which each player takes control of their own personal and customisable tank.

Novel features include:

- Bouncing bullets
- Unique power-ups
- Easy to learn, hard to master combat controls

A1.3 Elemental Tetrad

A1.3.1 Mechanics

Tank movement and combat controls

A player can control their tank with a few different inputs. Most importantly, the tank movement itself can be controlled with WASD keys on a keyboard. W and S moves the tank forwards and backwards relative to the orientation of the tank. A and D rotates the tank body left and right.

The left and right arrow keys will be used to rotate the tanks cannon left and right independently. If the player wishes, the controls for moving the tank and rotating the cannon can be swapped in the settings menu.

The cannon will rotate quickly in comparison to the whole tank body to provide more of a skill ceiling. If a player wishes to aim simply by rotating their whole tank, they have the option to do so. But, if a player wants to have faster reactions, they should master aiming with their cannon.

The camera will stay in a fixed position above the tank, looking down on it. It's important that the camera doesn't reveal the entire map to the player, but just enough of the surrounding area so that they can make tactical adjustments to their approach in real time.

The cannon is fired with the space key. The standard projectiles a tank fires are able to bounce an infinite number of times off walls and obstacles but will be destroyed after a fixed amount of time or collision with a player. However, players will not be able to simply spam projectiles into an area because each player will have their own limit on how many of their own projectiles can be active at once. If a player collides with a projectile, including one from their own team, they will die instantly. Whether or not the player can then respawn is dependent on the game mode.

Game modes

Ideally, there will be several game modes a player can choose to play, which all offer various strategies and objectives. As a base, the game should offer a basic Team Deathmatch mode, with opportunity to expand this selection further with content updates or, if time allows it, as modes available to play from day one.

Potential modes to be included:

- Team Deathmatch (TDM) - eliminate players on opposing team. One elimination = one point for team
- Domination (DOM) - capture and defend 3 control points A, B, C to earn score

- Hill (H) - attack and defend a designated control point on the map to earn score
- Cage Match (CM) – eliminate the enemy team before they eliminate you
- Bomb (B) - teams take turns attacking and defending two bomb sites

Mode	Rounds	Score limit	Time limit	Team sizes	Required players to start	Respawns	Power-ups
TDM	1	50	10 mins	5v5	2	Enabled	Enabled
DOM	1	150	10 mins	5v5	2	Enabled	Enabled
H	1	250	10 mins	5v5	2	Enabled	Enabled
CM	First to 5	n/a	2 mins/rnd before alt objective spawns	1v1, 2v2, 3v3	2, 4 or 6	Disabled	Disabled
B	First to 5	n/a	2mins/rnd	5v5	4	Disabled	Disabled

Maps / arenas

All maps in the game will be premade with no elements of randomness. They should also be designed with all game modes in mind. For example, accommodating for Domination control point positions, or bomb sites in Bomb. When taking these considerations, it's important for a game mode like Domination to have a large area for each control point. This is because projectile bounces could be abused if the area was too small. If it was small, then attacking players could simply spam projectiles into the area and very easily make it completely uninhabitable. To avoid this, the zones should be large, with multiple points of cover within them. This will force attacking players to push into the zone and carefully choose where they fire their projectiles.

Power-ups will be placed in fixed positions on each map, with each map having a specific selection that compliments its flow and pace. Power-ups will be explained in more detail, but to give some examples, a larger map should use the "Orbital Camera" and a smaller, more compact map should use the "Roadblock. Furthermore, these power-ups should be placed in positions that reflect their value, the higher valued being placed in highly contested areas.

Power-ups

Power-up	Details	Activation	Use time	Cooldown
Orbital Camera	<ul style="list-style-type: none"> • Player's camera zooms out to get larger view of surrounding area 	Activates immediately	30 seconds	3 mins
Railgun	<ul style="list-style-type: none"> • Single shot laser • Aiming laser shows potential path • Laser moves along target path at rapid speed when fired 	Aiming laser activates immediately, laser fires when player shoots	One time use	3.5 mins
Sludge cannon	<ul style="list-style-type: none"> • Firing sludge on ground slows players down • Reinforces roadblocks 	Cannon transforms immediately, sludge shot fired when player fires	Two sludge shots available, disappears from ground after 45 seconds	1.5 mins

Roadblock	<ul style="list-style-type: none"> • Deploy wall in any location • Breaks after 30s • Destroyed by railgun • Reinforced by sludge shots • Reinforce = +20s (doesn't stack) 	Activates upon deployment from rear of tank (player can still fire standard projectiles)	One time use, 30 seconds, extra 20 seconds upon first reinforcement	2.5 mins
Bamboozler	<ul style="list-style-type: none"> • Control decoy tank • Decoy looks different • Decoy cannot shoot 	Activates upon deployment (player can still fire standard projectiles)	10 seconds	2.5 mins

Customisation/progression

If the progression system is implemented, players would earn experience points (XP) that scale depending on various factors relating to their individual performance and team contribution in the most recent match. Players would also earn bonus XP for playing a match to the end to avoid players leaving early.

XP goes towards a players level, with each requiring an increasing amount of XP to level up. This level would be shown to all players in the game, and players would be rewarded for levelling up by earning cosmetic items at specific milestones which can be used to customise their tank such as body types, tank tracks, cannons and even unique particle effects and projectiles.

Players can choose a tank colour they desire from a selection of team colours. The game's factions will be identifiable by a red team and a blue team to make it easier to identify the other team against your own. So, a player can choose various shades of blue or purple to represent their tank when they are on the blue team and various shades of red and orange to represent their tank when on the red team. These will all be unlocked from level 1, however, more flashy or unique colours could be earned at higher levels as long as they show a clear correlation to a team.

A1.3.2 Narrative

Backstory

The game is set in a world with a society of living tanks. There is one continent in the game world, Tanktopia. The world was civil and peaceful. However, a wealthy tank, the CEO of a large robotics corporation infiltrated the government, and soon became the sole world leader. With this newfound power, a dictatorship formed. He enslaved tanks across the world and enforced his rules with his own private military, consisting of robot tanks manufactured at his many robotics facilities.

The world soon became tired, beginning a revolution and from it, a civil war of Tanktopia... The Iron Rebellion. The faction formed was named "The Armoured Alliance", a nickname was given to the world leader "The Mechanized Menace" and his army, the "Mechanized Menace Enforcers" (M.M.E).

This backstory would be told through an intro upon starting the game, making use of still frames and narration.

Map theming

The maps in the game play into this narrative, here are some examples of map names and themes that could be developed:

- M.M.E Tank Factory
 - A factory that plays an important role in the war, the manufacturing hub for the M.M's robot army
- Steelhaven Boulevard
 - A once lavish street lined with bright green trees located in the heart of Steelhaven, the capital city of Tanktopia
 - Since the uprising of the M.M, the street has transformed into a shell of its former self, now a propaganda machine, with a statue of the menace erected where a once great monument stood
 - Players can fight in the open street or in buildings that have been connected by destroyed interior walls
- Iron Forest
 - A snowed in forest located in the Steelspine Mountains of Tanktopia where a secret Armoured Alliance base of operations has been discovered by the M.M.E
 - "Iron" Forest because the trees have frozen over, giving them a metallic look

A1.3.3 Aesthetics

Art style

The game will use 3D voxel art to give a retro and whimsical feel. The use of 3D allows for a greater sense of depth when viewed from above, whilst also giving a lot more opportunities for detail and lighting in level design.

The assets will be designed to fit the theme of a tank society. With everyday items being substituted for mechanical counterparts where possible. For example, the currency that the world runs on could be variations of metal gears. Or trains, instead of running on wheels, could run on tank tracks.

The game shouldn't be too gritty but shouldn't be too cartoonish either. Instead, striking a balance between them. The game should be enjoyed by everyone, so pushing towards realism could put off the younger audience, whilst the older audience could be put off by a game that relies heavily on bright colours and child oriented designs. The general rule of this should be "what would the world actually look like if everyone was a tank", whilst also embracing the absurdness of the theme.

Sound

Sound will be used in various ways, most importantly in the tanks. There will be sounds played when a cannon fires, sounds for tank tracks spinning and grinding against the ground beneath them, projectiles colliding with objects and tank destruction. The sound played when a tank is destroyed will be a mix of a realistic explosion and some cartoon elements. For example, the sound of springs finally releasing their tension and flying out of the tank or the wobble of metal sheets.

Another way sound will be used is map ambience. Each map should have various ambient sounds playing in the background. Here are some examples of how this can be used for the previously mentioned maps:

- Tank Factory
 - Sound of machinery and conveyor belts used to construct robot tanks
 - Sounds of sparks flying
 - Alarms in certain areas due to heavy machinery faults

- Steelhaven Boulevard
 - Propaganda playing over loudspeakers
 - Some of the buildings could be shops that still have soothing music playing in the background
 - Since it's the capital city, there are likely to be multiple conflicts happening at once, so distant explosions could be heard
- Iron Forest
 - Sounds of wind blowing through trees
 - Snow crackling under the tanks
 - Birds chirping

User Interface

The UI will be as minimal as possible, with most UI elements appearing in world space. For example, player names and level icons will appear around the corresponding player's tank.

As for screen space UI, there will be an elimination feed on the left side of the screen that shows the 5 most recent eliminations, detailing who eliminated who, with the names being coloured appropriate to their team colours. At the top of the screen, a timer will show the remaining time of the round or match. On either side of that, scores will be shown for each team.

A player can also show a full scoreboard by holding down a key. This scoreboard will show all players on both teams, with each of their individual stats for that game.

The screen space UI should also follow the theme of the game. For example, when the scoreboard is shown, it could be a metal sheet with the player names and stats engraved into the metal.

A1.3.4 Technology

The main technology in this game will be a custom implementation of the UDP networking protocol that provides more reliability than standard UDP without sacrificing speed.

The main input device would be a keyboard, however, gamepads like Xbox or Dualshock/Dualsense controllers could be supported in the future.

As previously mentioned, the game will use 3D voxel art for assets. MagicaVoxel, a free voxel art editor, will be used to create these assets.

Unity will be used to develop the game because of the many useful tools it provides, most beneficial being lighting and physics.

Section B) Market Analysis and Business Plan

B1.1 Market Analysis and Business Plan

Whilst there is a vast array of competitive PvP shooters on the market, this game manages to stand out from them with its unique theme. It offers a different experience in comparison to popular arena shooters like Halo Infinite, and instead focuses on the indie market, of which the competition for top down arena shooters is substantially lower. When looking on the Steam platform, a lot of top-down arena shooters focus more on single player gameplay, with the player fighting against AI controlled enemies. When it comes to PvP based, top-down arena shooters, they focus on much more niche gameplay elements. However, one game was found that strikes similarities to this game proposal in its gameplay called “Impact Point” on Steam. Released in 2022, with an all-time player-count peak of 283 (SteamDB, 2023). It is a smaller scale, 2D top down shooter consisting of 2 – 4 players in a free for all scenario with no team based gameplay. Whilst there are some similarities to the game proposed in this document, this game stands out on it’s own in comparison due to it’s unique art style, theme and gameplay.

The target platform for this game is PC, with the potential of porting to other platforms such as mobile and consoles in the future. The target demographic is ages 12 and up. Whilst the game can be cartoonish in it’s design and doesn’t go for realism, the overall tone of the story could be inappropriate for anyone younger.

The game will be released for free in attempt to bring as many people to the game as possible, especially with it being online only. When it comes to generating revenue, there are several ways the game can be monetised. Due to the big focus on player customisation, an in-game store could be added that allow players to purchase individual customisation items, it is important to note though that these items should be purely cosmetic and offer no gameplay advantage over anyone else in the game as this would very easily create a negative sentiment towards the game. Another way the game could be monetised is by utilising the popular “battle pass” business model. This model allows players to spend money to unlock an in-game progression system, with each level in the system giving the player access to a new cosmetic item. This pass would be seasonal, expiring after a set number of days, with all of those cosmetics now becoming unobtainable, to be replaced with a new pass and new cosmetics.

Due to the reliance of in-game monetisation to generate revenue, player retention and engagement is a very important metric. Free content updates can arrive with seasonal battle pass updates to help drive this retention by adding new maps, modes, power-ups and even progressing the in-game story.

It is also important to note the ethical issues of these monetisation driven retention methods, as it can very quickly lead to addictive behaviours in certain individuals, especially a younger audience. The micro transactions in the game will be purely optional and a player should never feel like they are missing out on gameplay features unless they spend money. That’s why there should be a good amount of cosmetic items that are earnable through gameplay, without spending money and most importantly don’t rely on excessive amounts of playtime to earn.

Finally, all game models will be created using the previously mentioned MagicaVoxel tool, of which the developer has stated anyone is free to use for any project. In terms of audio, all sounds will either be created originally or be a combination of existing sounds gathered from free audio libraries, provided this use case is permitted.

B1.2 Development Costs

The game is expected to be developed in 400 hours with a team of 5 people. This includes art and programming. The team will be split between artists and developers, with the dev team working on the initial gameplay features, whilst the art team creates the required art assets. However, both teams will provide assistance to each other when needed.

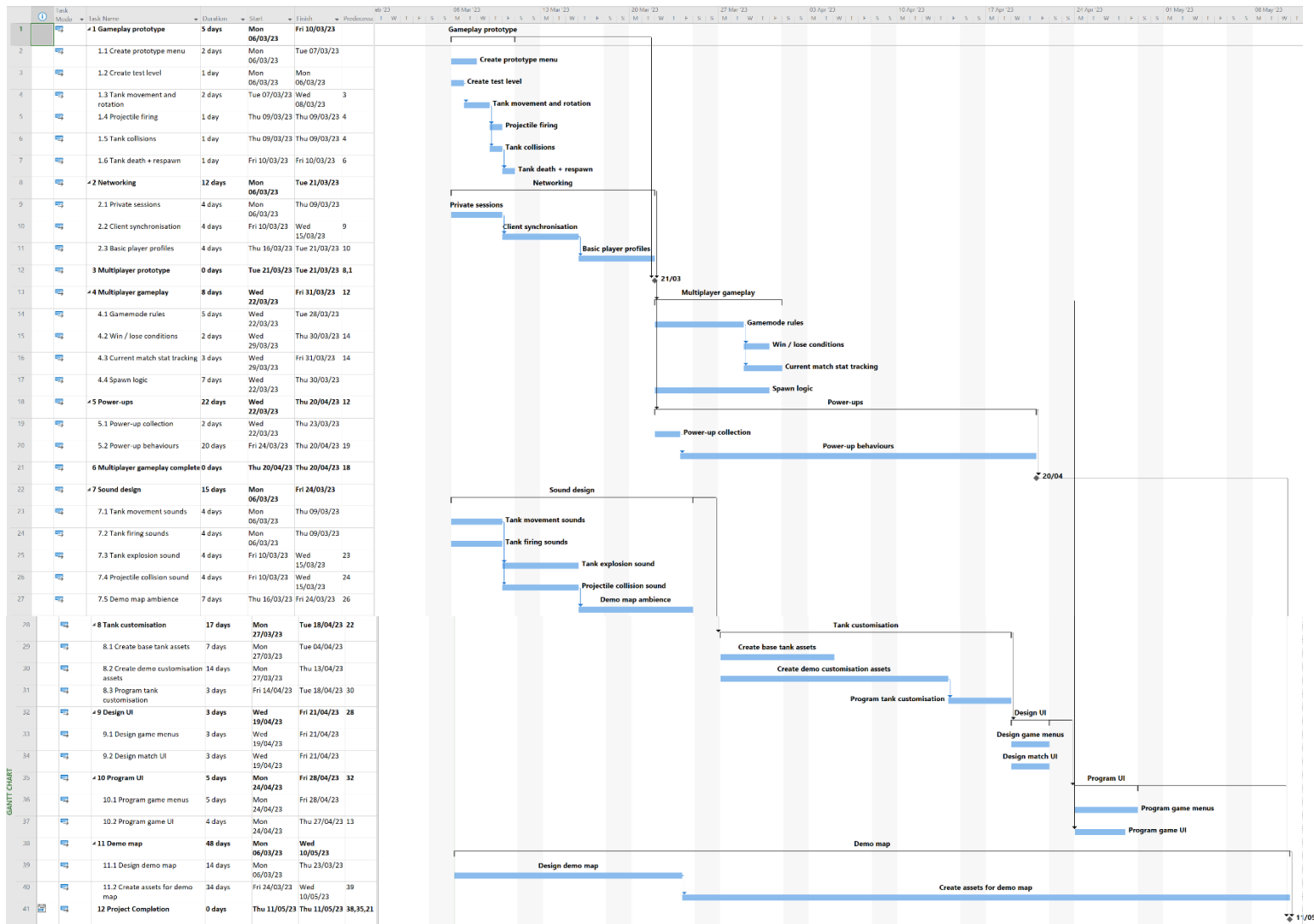
According to Prospects (2022), the typical yearly salary for an entry level game developer ranges between £19,000 and £25,000. A good middle ground here would be £22,000. The project is expected to run for 2 months so each developer should be paid £3,666 for 2 months of work, multiplied by 5 developers is £18,333. The developers will be working remotely so there is no need for renting office space.

Each developer must be provided with the appropriate equipment, including a capable PC, monitor and any required peripherals. The PC retailer Chillblast provides a PC hire service, allowing for the rental of an affordable, indie game development PC for 1 – 10 people at £200 per unit for a minimum of 1 week rental time (Chillblast, n.d). Scaling this up to two months offers a price of £1,600 per unit, multiplied by 5 developers is £8,000. This rental also provides a 24" monitor, mouse, keyboard, surface and a headset.

Unity and Visual Studio Community can be used for free, with VS Community being free to use for up to 5 users (Unity, 2023) (Microsoft, 2023).

Developers	£18,333
PC rental	£8,000
Total:	£26,333

B2.1 Development Schedule and Project Management Plan



References

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