Multiplayer Capture the Flag - Design Process Report
By Joseph Gilbert

This report outlines the design process of a multiplayer Capture the Flag map from beginning to end. The report focuses on the iteration process to demonstrate how the map has evolved from the initial paper prototype to the final playable level. The report ends with an evaluation and reflection on this process.

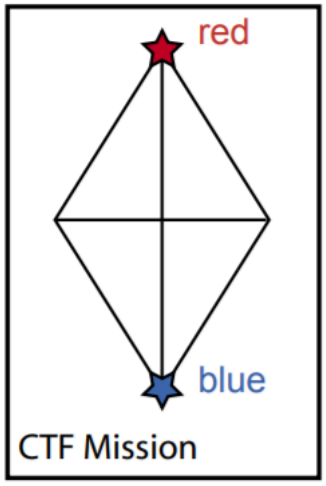
Multiplayer maps are created to be played by each user over and over, possibly thousands of times for the most dedicated players of a multiplayer game. While they may look simple initially, the best multiplayer levels are designed intricately to the smallest details of signposting a player this way or that. The most crucial aspect of the design process is a constant loop of iteration and playtesting, as the quality of a multiplayer level can only be assessed when player behaviour on that level is observed.

The provided brief set out the task of creating a ‘Capture the Flag’ (CTF) level for the multiplayer game Unreal Tournament. The level was to be designed for small team-based gameplay, either 2v2 or 4v4. For the purpose of the brief, the focus of the design process was to prioritise perfecting the flow of the CTF gameplay, while still lighting and texturing the map to an adequate level.

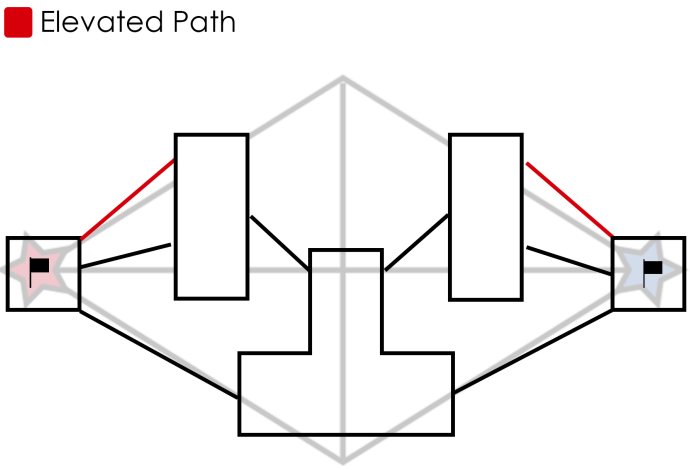
When considering the experience of the end-user, I first looked at the game itself and the audience most likely to be playing it. Unreal Tournament is an important name in the history of multiplayer first-person shooters, being a pioneer of the genre on the PC platform in the early 2000’s. However, in today’s market it has more competition in the FPS genre and pulls in a more niche, hardcore audience.

For the above reasons, I assumed that the majority of end-users would be comfortable with the game, as well as CTF modes in general. There are likely to be a large percentage of mid-level players who play on the designed level, with smaller percentages of high-level and low-level players in terms of skill.

The Unreal Tournament Editor is less of a universal tool than a generic game engine, due to it being designed specifically to create multiplayer maps for Unreal Tournament. This meant that the level had to be designed around the pre-established rules and mechanics of Unreal Tournament. This came with certain constraints that had to be considered, such as the movement systems of player-characters. As well as their basic movement, Unreal Tournament characters have the ability to leap forward, slide and jump. This, along with the weapons included in the game, had to be taken into account when designing the map.

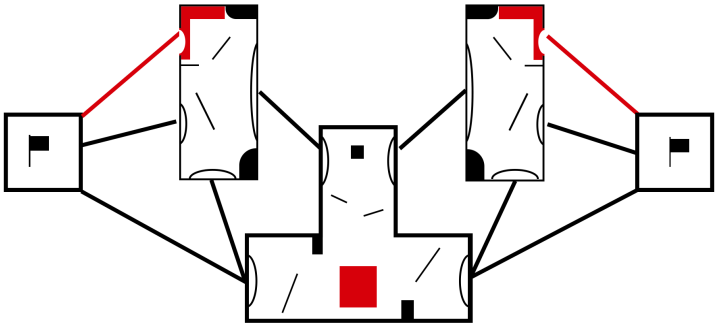


Designing this multiplayer stage began with reading Benjamin Bauer's "Ben's small bible of realistic multiplayer level design". Bauer leans on his personal experiences in this article to outline the fundamentals of multiplayer design. The above image is Bauer's basic layout for a CTF map, which shows that there should be three ways to each flag and the map should be balanced for each team.

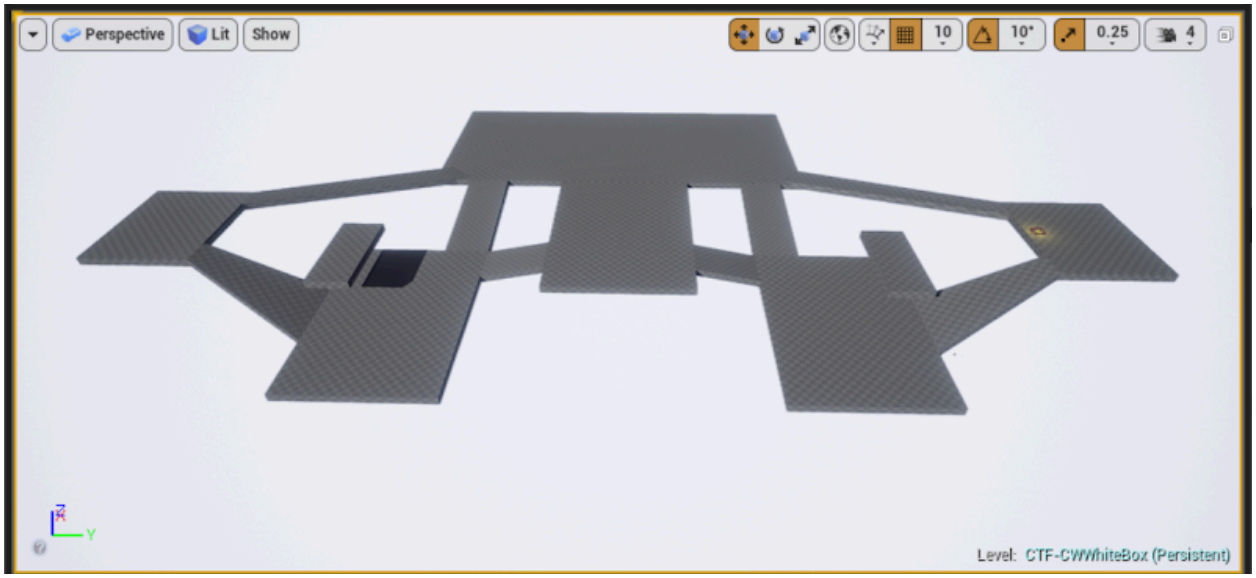


The layout above is the initial 'paper' prototype for the level. The design uses Bauer's basic CTF layout as a basis to build from. When designing this map, one of the aspirations was to funnel players into scenarios where they would be presented with interesting combat situations, while also having options on how to attack and defend each team's flag. This was tackled by having one central area that each team can reach in the same amount of time from their base where the biggest firefights will occur. Each team then has a smaller area closer to their base in which they can set up more defensively.

Elevated Path



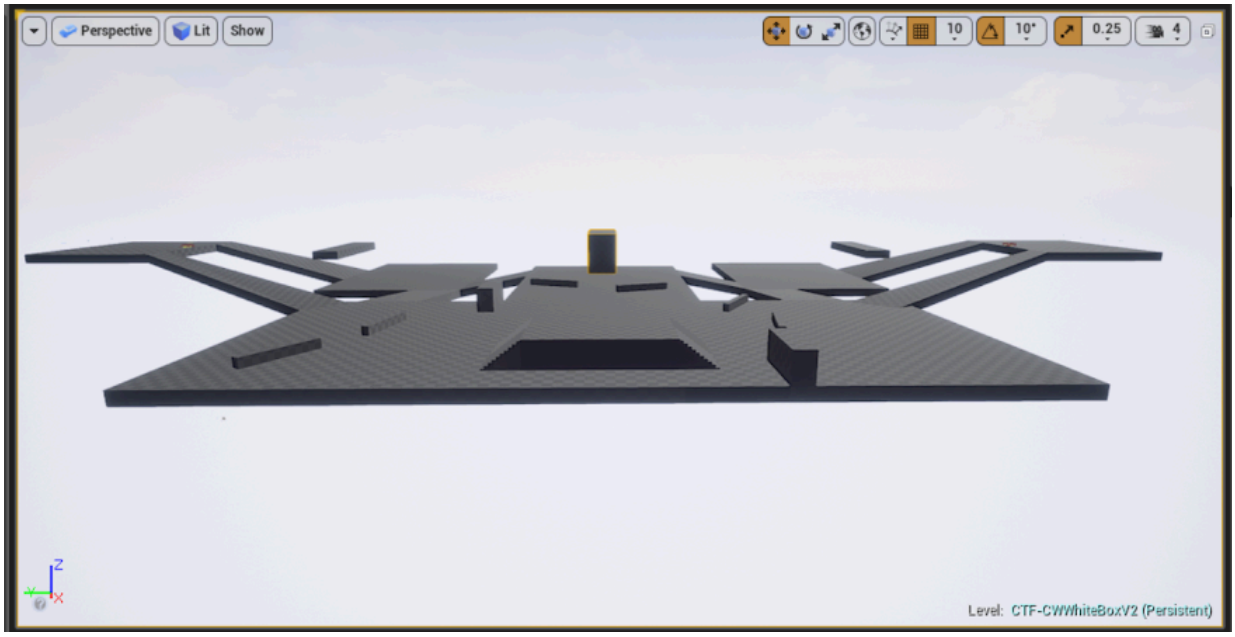
To develop the paper prototype, more detail was added to the combat areas to work out how the combat would flow within each specific area. The layout is almost entirely symmetrical to ensure balance for each of the teams. Barriers and walls have been added to allow players to set up more defensively when an opposing player is close to scoring or a team is defending a lead. The red elevated section in the central area has been included to act as a vantage point to encourage players to move towards this area rather than run in close to a straight line. The thinking behind this is that they will gain an advantage by reaching the vantage point area and will find themselves in the line of fire if they attempt to run in a straight line.



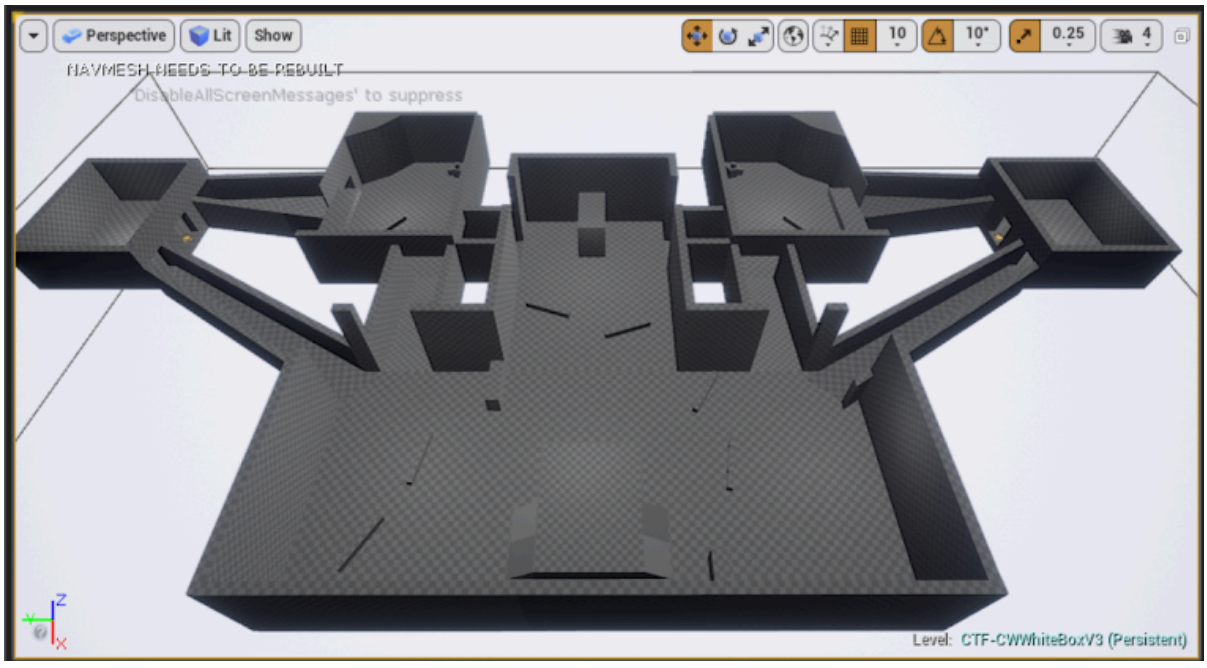
When transferring the initial prototypes into Unreal Tournament Editor some changes were made almost instantly. The elevated platform on each of the two defensive areas was moved to be the central path from the base. In addition to this, the physical central path to the defensive

areas was removed and replaced with a jump pad. This allows for a fast exit from each base, making it more difficult for a player to reach a base to capture, or score with, a flag than it is to leave a base.

The paths that connect certain sections of the maps were also moved around to simplify the layout, making it easier for players to memorise.

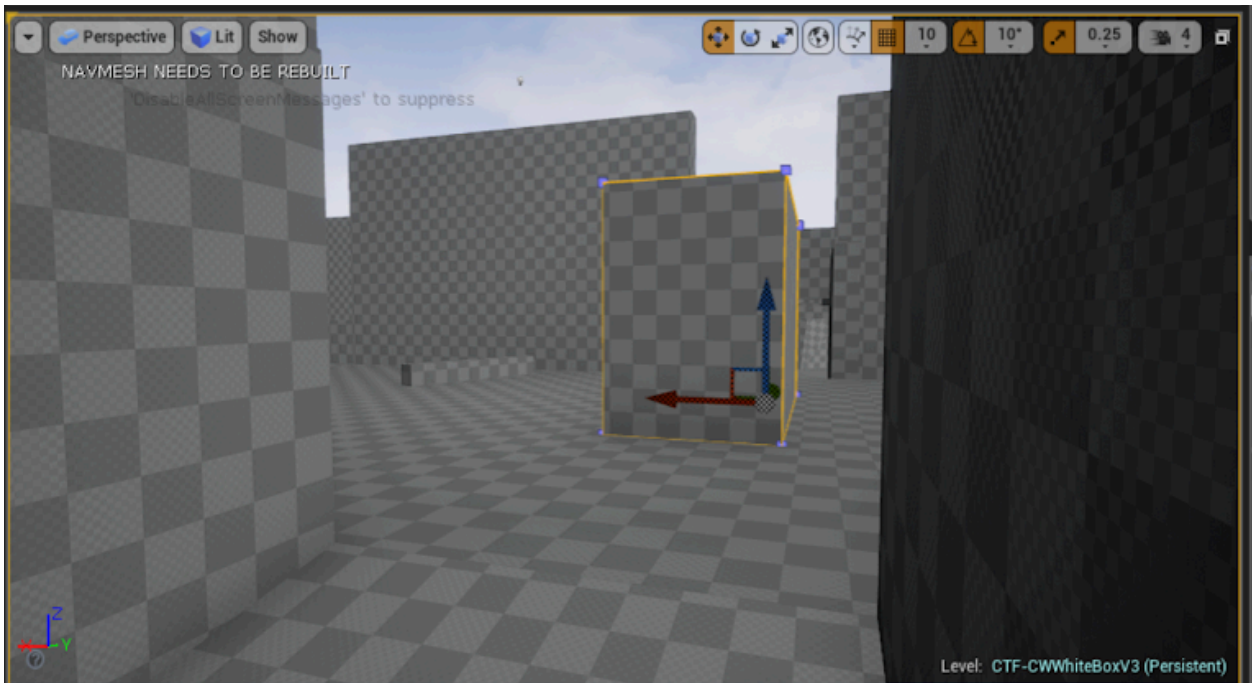


The next stage involved adding the more detailed elements of the map such as walls, barriers and stairs. No significant changes were made at this stage.

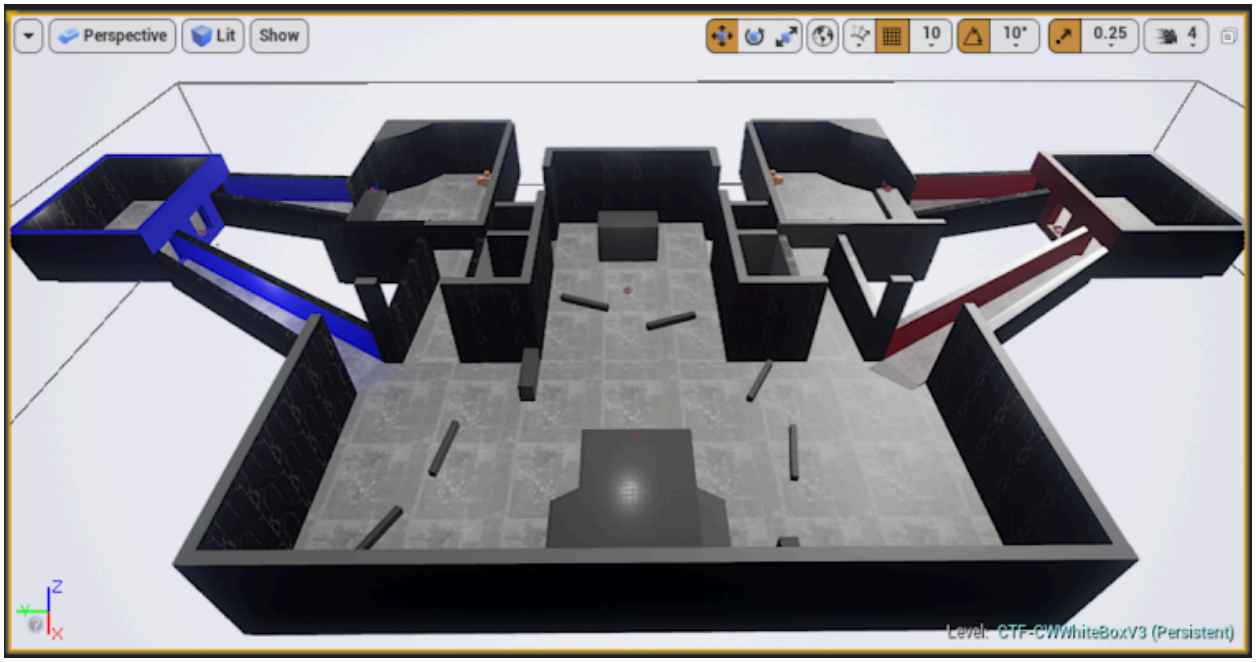


Once the walls were set up around the map and details were added in, playtesting the map was able to begin. Due to certain external circumstances, the map was only able to be playtested using Unreal Tournaments bots. While this was not the ideal situation as observing actual player behaviour would have been preferred, Unreal's bots are still incredibly well implemented and aided in testing the flow of CTF gameplay.

The first set of playtests found that players still favoured the central path through the map disproportionately compared to the outer route through the large battle area, despite previous design attempts to avoid this. Another issue that was found was that player behaviour through the central path was too predictable due to a lack of choice.



To solve the predictability issue, the wall that was directly in the middle of the map was changed to stand on its own and offer the play a way around each side of it. This creates a cover-fire scenario in the centre of the map where firefights most often occur, encouraging players to attempt to trick and outwit the opposing team. This also prevents players from either team having a sightline straight from one base to the other.



To address the issue of players preferring the central route, weapons were added to draw players into the larger combat area towards the bottom of the above image. A sniper rifle was added to the elevated platform, where any player that picks it up will have a direct view over the central firefight area. This encourages players to attempt different ways of traversing the map so they do not walk straight into the line of fire.

A rocket launcher was also added in the area between the central path and the outer path. This is a sought-after weapon that draws players into a high risk area for a powerful advantage.

The addition of each of these weapons rewards players who come out on top in battles of skill with an advantage over the opposing team.

The large battle area on the outer route was also condensed as there was space going unused which was found to be unnecessary.

Upon further playtesting, the rocket launcher was found to not affect gameplay in the desired way, as players were able to pick it up as they were passing through rather than have to battle for it. The weapon was moved slightly more towards the outer route. This change was found to be successful as it encouraged players to go out of their way for the chance to pick up the rocket launcher, meaning they do not follow one route through the entire map.

Shock rifles were also added to the platforms players land on if they leave the bases via the jump pads. This helps to vary the weapon arsenal between players, creating different considerations that players have to take into account. The shock rifle was chosen as it is more powerful than the standard weapon loadout but not to a point where players are avoiding the main objective to pick it up.

Overall, the playtesting and evaluation process made much more of a difference to the gameplay flow of the map than it would look at first glance. The flow now works as intended at the beginning of the design process, but took significant changes to reach that point. The evaluation process has specifically highlighted flaws in the initial paper design such as a lack of reasons for players to not simply run straight between bases.

Reflecting on this experience, I feel that I should have put more thought into the initial paper prototype. Throughout this project, I felt that however the prototype was laid out, as long as it vaguely fit Bauer's basic CTF layout then it would be able to be iterated into an effective multiplayer map. While I am satisfied with the final result, I feel that if the map was initially designed in such a way that players did not have an obvious route to the opposing base then more time could have been put towards adjusting an already fun game flow rather than fixing a bad game flow.

Through completing this project, I have learned that players are best encouraged to explore different areas of the map through tangible advantages such as better weapons, rather than simply providing an alternative route that could provide a theoretical strategic advantage in the mind of the designer but is not incentivised.

References:

- Bauer, B., 2004. Basic Strategic Balance. Ben's small bible of realistic multiplayer level design, 1, 7.