Project Ether

**Overview**

*Project Ether* (name pending)is an Oculus Rift-enabled, first-person shooter with light RPG and exploration elements. The goal is to progressively take control of an alien planet from an invading force by raiding their bases, securing their resources, and helping the native inhabitants. The environments, villages, and bases are procedurally generated to help provide each player with a unique experience. In addition, *Ether* will make use of unique and over-the-top damage and ability FX (gibs, orbital laser weapons, disintegration, etc) to reward players during combat.

A technical proof of concept is currently in development (WIP) and can be found [here](http://www.benny-wilson.com/uncategorized/kbeditor-the-next-game/www.benny-wilson.com). It’s being developed with a custom engine, however a more robust engine like UE4 or Unity would be a better choice for actual production.

**Who we Are**

[Christopher Forseth](https://www.linkedin.com/in/christopher-forseth-58234810/)

Christopher ”C4” Forseth is a game programming lecturer at SMU Guildhall. He also has 10 years of professional game programming experience at Volition Inc., Robot Entertainment, and Playful Corp. His shipped titles include Saints Row 2/3, Red Faction Guerilla, the Orcs Must Die series, Age of Empires Online, and the procedurally generated Creativerse. C4 has experience with network programming, rendering, optimization, as well as most other aspects of game development. C4 also has studied Mathematics at North Dakota State University.

[Benny Wilson](https://www.linkedin.com/in/benny-wilson-78bb67/)

Benny has developed games professionally for over 12 years. He’s worked at Paradigm Entertainment, Gearbox Software, id Software, and Robot Entertainment. His title credits include Borderlands, Rage, Orcs Must Die: Unchained, and Brothers in Arms: Hells Highway. Benny’s main interest is FX programming, but he has a lot of experience in more general areas as well. His personal projects can be found at <http://www.benny-wilson.com>.

**Gameplay**

**Core Loop**

The core gameplay loop of *Ether* consists of:

* Exploring outdoor areas to find loot, upgrades, quests, and villages.
* Visiting villages to shop, gain access to enemy bases and quests, and prepare for base assaults.
* Capturing enemy bases to earn technology upgrades, advance the story, and facilitate further access to other outdoor areas.

**First Person Combat**

First and foremost, *Ether* is a fast paced first-person shooter. The combat will focus on having many easily defeated enemies as opposed to tanky bullet sponges. Enemy types will vary from mindless hoards of cannon fodder to intelligent combatants who take cover and execute flanking maneuvers.

The Oculus Rift’s motion tracker gives the player the opportunity to “lean out” from behind cover and to duck projectiles. The Oculus Touch will be used for aiming and shooting which will increase the level of immersion in the combat.

**Capturing Enemy Bases**

Players will capture bases by killing all of the enemies in them. These bases will be procedurally built from premade rooms and props. This will allow for much tighter combat than the outdoor areas since AI, navigation data, cover zones, etc can be precomputed and tuned accordingly.

Taking over bases will provide a sense of progression by altering the game world. For example, the surrounding areas of the base will be less hostile, new upgrades and quests will become available, and the nearby villagers will be more supportive of the player’s mission.

*Enemies*

*Villages*

Villages are also procedurally constructed from prebuilt pieces. The goal is to have engaging and believable villages that are interesting to explore, provide quests and upgrades to the player, vendors, and feel like “home” to the player while preparing to capture the next enemy base.

*Mining/Crafting*

Players can mine resources in the outdoor areas and craft items. Crafted items will include things like health buffs, weapon upgrades, etc. Mining and crafting can also be used as quest objectives and to improve the player’s reputation with the villagers. This mechanic is intended to encourage exploration while not being tedious. Many of the same items will be available through other means if preferred.

*Dynamic Events*

Dynamic events will be used to add variety to the outdoor exploration. These will include things like enemy ambushes and random quests. They’ll be much shorter in scope than regular quests and serve to offer small rewards and storytelling opportunities, and to give the player combat practice before raiding bases.

*Day/Night Cycles*

Time of day will play a moderate role in the game. Some activities may play out better (or not all) at certain times of day. For example, assaulting a base at night may provide a visibility advantage, orbital satellite lasers may only be used during the evenings, shopkeepers will only be available during business hours, etc.

**Technical Considerations**

*Overall Tech Goals*

* Develop *Ether* with optimization in mind to help maintain responsive controls and frame rates.
* Keep load times as short as possible to get players in and out of their world quickly.
* Achieve acceptable performance on low-end PCs while providing nice visuals on high-end platforms.

*Procedural Generation*

Procedurally generating the environments is the biggest technical challenge of *Ether*. There are several good examples of games with well-done procedural terrain and landscapes. However, *Ether’s* major focus is on creating interesting villages and dungeons.

Procedural content generation provides many advantages such as the ability to quickly generate large play spaces, reducing the development burden on artists, smaller memory foot-prints, and reduced streaming and memory demands. Capitalizing on these benefits will free up resources for focusing on the moment-to-moment combat and developing memorable effects.

*Visual Style*

The flat-shaded style was initially chosen for aesthetic reasons. However, there are important technical benefits of this choice. It helps reduce the run-time burden of a texture streaming system, reduces eye strain in VR sims, lowers the memory footprint, and helps with rendering performance. These benefits are especially important on min spec PCs where maintaining solid frame rates is a greater challenge.

Performance and memory gained from this choice will be spent on treating the player to unique and interesting FX during combat. FX are also a natural candidate for lodding on low-end machines.

*Oculus Rift*

VR simulations require high frame rates, so it’s important that *Ether* performs well in all situations. Some visual FX may be disabled to help achieve this goal. Focusing on performance early and often will help ensure that the game reaches its visual goals while maintaining responsive controls.

Our early tests have shown that VR “simulator sickness” and eye strain are greatly reduced by the flat shaded art style and lack of high frequency textures.

*FX*

Unique and over-the-top FX are very active areas of research for us. Creative and original dismemberments, weapon FX, and other “wow” moments are rewarding ways to punctuate the combat to the players.

*Drop in/out Co-op*

Responsive and accurate two player co-op is another major challenge. Good quality shooting gameplay requires low latency and solid networking prediction.