Welcome!

It's great that you're interested in our team, and we'd love to have you as a member. Most of us congregate on either our forums or the development channel on IRC, with quite a few using both. If you sign up on our forums, we can provide you with access to the private development section. As for the IRC channel, it can be accessed via a webchat link if you do not possess an IRC client.

Forums: http://unvanquished.net/forum/forum.php

IRC (web): http://webchat.freenode.net/?channels=unvanquished-dev

IRC (client): irc://irc.freenode.net/unvanquished-dev

Introduction

This is the condensed design document for the Unvanquished project. Major details are presented in a summarized fashion for ease of comprehension. It should contain all relevant technical information for the project, as well as a description of our gameplay. If a topic requires further clarification, please feel free to ask a team member for more information.

Licensing

Our engine is licensed under the GPL version 3. All assets are licensed under one of the CC licenses: CC-BY-SA is preferred for the base assets.

Technical Information

Engine

Daemon, the engine used by our game, is ultimately derived from Quake 3 and ET:XreaL. This provides us with a wealth of features not found in stock Quake 3, including a modern renderer and support for recent file formats. Our own work with the engine has expanded its capabilities further, with the inclusion of new effects, numerous improvements, and a modernized interface.

Features

- OpenGL 1.3 ("vanilla") and OpenGL 3.2 ("GL3") renderers, with the latter supporting the following effects:
    - Weight-based color grading.
    - Bloom.
    - Rim lighting.
    - Heat haze.

- ○ GLSL shader effects.
- ○ Water refraction.
- Bots utilizing behavior trees.
- HTML/CSS interface using libRocket.
- Diffuse, normal, specular, and glow maps for textures.
- Powerful shader system to add effects to each texture
- MD5 models with skeletal animation.
- Minimaps.
- VoIP.

Programming

Our engine is almost entirely coded in C, with some C++ included as well. CMake is used to build the game. We use a Git repository for our codebase as well as associated scripts, including shaders and particles. When coding for the project, it is best to submit your code as a pull request on Git when you are first starting out. Also, please report any and all bugs via the Git bug tracker.

Artwork

Style

Our game utilizes a sci-fi setting, with high-tech humans and monstrous aliens. The maps that players fight on can range from abandoned space stations to alien worlds, depending entirely on the level designer's imagination. In general, the theme is that the human players are responding to a threat posed by the alien players, whether through invasion or infestation. As such, the humans may be defending a colony, or recovering an area with industrial or scientific interest.

Human technology has a futuristic look to it, with various polymers and reflective metals, although the military nature of it ensures that things will generally appear somewhat rusty or scratched up due to continued usage and recycling of components. Screens and exposed energy fields will often display a blue glow. Several human weapons fire ammunition of various types, while the remainder range from flamethrowers and grenades to more exotic, energy-based weapons such as plasma rifles and an electrified saw.

On the other hand, the aliens do not possess any technology whatsoever, instead using their bodies for combat, with an appropriate array of claws, talons, and sharp teeth. Lacking bullets, aliens will instead try to trap or overwhelm their prey, utilizing a combination of superior mobility, stealth, and a diversity of specialized attacks. Toughened carapace serves as the sole source of protection. In general, the aliens range from arthropod to reptilian in appearance,

with the smaller, lower forms appearing more arachnid, and the gradient shifting towards draconic features in the larger forms.

Whereas the humans surround themselves with machinery and high technology, the aliens are much more organic in appearance, with even the support structures in their bases being immobile, living organisms. Entering a human base would present the viewer with an array of metallic structures generating a faint mechanical hum, while the alien equivalent would have a dull throbbing to it, as defensive lifeforms adhered to walls by means of a sticky organic substrate slowly breathe and take in their surroundings.

Modeling

We utilize the MD5 format for our models. The maximum polycount imposed by the engine is 10,000 tris, although for performance, an upper limit of approximately 7,000 tris is preferable. Depending on the size of the model, texture sizes should be 512, 1024, or 2048 pixels per side; however, textures need not be in powers of two. A lossless format is preferred, such as the WebP, TGA, or PNG formats.

Animation

Our engine supports skeletal animation, with an upper limit of 128 bones and 4 weights per vertex. In addition, animation blending is performed in-game by the engine. To export animations to the format used by our engine, it is preferable to use Blender or 3ds Max, as Maya may pose some complications.

Sound

Files should be in the Ogg Vorbis format, with a sampling frequency of 44 Hz. Mono should be used in place of stereo, as directional audio is handled by the engine.

Gameplay

Summary

There are two teams, alien and human, that compete against each other to win a match. Both teams are capable of constructing a base, and the objective of the game is to destroy the enemy base so that the enemy team is no longer capable of spawning. When all enemies have been killed and their base is destroyed, the team that has accomplished this has won the game. In order to meet this goal, players on both teams are able to upgrade themselves in order to adapt to different combat situations or provide additional firepower. These upgrades are purchased using points gained by defeating enemy players. Upgrades are lost when dying, and do not carry over between games.

Differences

There are several fundamental differences between the two teams:

Detection. Humans must purchase the helmet upgrade to be able to utilize a radar to detect opponents, while aliens are always capable of doing so, regardless of form.

Healing. While the aliens are capable of regenerating at a constant, steady rate, the humans will not regenerate on their own, and carry a single-use medkit to heal themselves with.

Movement. Typically, humans are stuck to the ground, unless a jetpack is purchased. Aliens, on the other hand, can do anything from wall-walking, wall-jumping, and even pouncing.

Upgrades. Aliens that grow into larger forms cannot revert these changes, except through death. Meanwhile, humans are always able to change the equipment they use.

Independence. The aliens are capable of regenerating and changing into larger forms anywhere on the map, while humans must return in order to heal, restock ammunition, and upgrade.

Bases. Human base structures cannot regenerate on their own, unless a certain structure is built or a player repairs them. Alien buildings can always regenerate, but cannot be player-repaired.

Humans

The humans in Unvanquished use an assortment of high-tech weapons and machinery in combat. Upgrades can be purchased and sold at the appropriate base structure. Only one primary weapon may be carried at any given time, while the secondary weapon slot is taken up by an emergency weapon, the blaster.

Weapons

Blaster. Free, slow-firing energy pistol with unlimited ammo.

Rifle. Free, rapid-firing assault weapon. The default weapon.

Grenade. One-time use, provides a large blast with heavy damage.

Painsaw. The human team's sole close-range weapon, an energy saw.

Shotgun. Highly damaging short-range weapon, with a slow firing and reload rate.

Lasgun. Accurate energy weapon with higher damage than the rifle, yet slower.

Mass driver. Sniper rifle with a scope. Limited ammunition, and very slow.

Chaingun. A machine gun with a very high rate of fire, but inaccurate.

Flamer. A short-range flamethrower with ample ammunition, very damaging.

Pulse rifle. Medium-range plasma rifle with slow, but powerful shots.

Lucifer cannon. Extremely powerful plasma cannon with slow-moving shots.

Upgrades

Light armor. Protects the torso and limbs, but not the head.

Helmet. Gives head protection and enables usage of the radar.

Battlesuit. Full-body protection, but restricts mobility and usage of other upgrades.

Jetpack. Allows for slow, yet steady flight.

Battpack. Provides additional ammunition for energy weapons.

Base

Reactor. Crucial structure that provides power to the rest of the base.

Telenode. Human spawn point. Can operate even without power.

Turret. Medium-range defense structure with a rapid-fire machine gun.

Medistation. Provides health and restocks medkits.

Armory. Allows for upgrades to be brought and sold, as well as restocking ammunition.

Repeater. Allows for structures to be built further away from the reactor.

Drill. Extracts resources from the ground.

Defense computer. Permits for base structures to slowly regenerate.

Tesla generator. Short-range defense structure with a powerful electric shock.

Aliens

Instead of using technology, aliens are their own weapons. They are capable of growing into larger forms in order to gain new attacks and added health, but they cannot revert these changes. In general, aliens are very mobile and most possess some degree of stealth.

Forms

Dretch. Free, tiny stealth form with silent footsteps and a lethal bite.

Granger. Free, small construction form that builds the alien base.

Basilisk. Small stealth form with a healing aura and the ability to grab opponents.

Vulture. Small flying form with a diving attack.

Marauder. Medium assault form with a wall-jump and a rapid bite.

Dragoon. Large assault form with a pounce attack.

Tyrant. Huge assault form with ample health, powerful slashes, and a trample attack.

Base

Overmind. Crucial structure that enables operation of the base.

Egg. Alien spawn point. May be built on ceilings.

Acid tube. Short-range attack structure. May be built on walls and ceilings.

Barricade. Defensive structure with high health. Can retract to allow passage.

Leech. Extracts resources from the ground.

Booster. Amplifies regeneration rate and adds poison to alien attacks.

Trapper. Paralyzes human movement. Can be built on walls and ceilings.

Hive. Long-range attack structure that emits homing swarms.