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Design Document started 27th July 2009
Design Document revised 7th July 2010 by thenerd

Project Organized and led by thenerd

1.0 Introduction

1.1 Story

proposed by thenerd on 26th Jul 2009 at 21:20 GMT, revised by Tom J on 28th of July 2009:

"A new rogue island nation has suddenly appeared, and with a vial of "antiprotein", a chemical that attacks on a cellular level and kills organisms instantly; and access to a highly dangerous nuclear bomb - they are in a position to attack any nation with it. If the bomb explodes, it will spread the antiprotein, killing everyone within thousands of miles.

Their demands to the UN, they will fire the antiprotein bomb at whichever developed country pays them the least over the next 2 week period. When two weeks is over the lowest payer will be eliminated, everything and everyone in the nation killed.

Several countries are hesitant to spend anything, given both the economic conditions, and their own principles. However all the countries fear that one will stab another in the back at the final minute. So an international force is agreed to head to the island and dismantle the weapon, before the nation are able to fire.

You have two weeks to bring the world to rest. You have the tech, the money, and the heavy weapons. But do you have enough time?**"**

1.2 Contributors

thenerd	Organiser/Team leader/Programmer
BMacZero	2D and 3D Artist, programmer
Miso	Programmer, 3D Artist
Monk	Programmer
kaedroho	Programmer
kuljot	Programmer, Sound Technician
N3wton	Programmer
How is it going	Programmer
Dared1111	Game Designer, 2D Artist and 3D Artist.
zaxer thawl	3D Artist, Sound Technician, 2d Artist and Level Designer
Tom J	level designer, game designer and 2d Artist
Derekioh	Programmer
Xarshi	Programmer

1.3 Art Style

The Art Style for Biostorm will be a realistic modern style. Try to aim for high-quality art resources, and when possible use shaders and effects to increase the realism. However, the first priority when coding is speed, and thus more computationally intensive shaders will be avoided.

2.0 Mechanics

2.1 Movement

The player may do a regular jump, the height determined by class

The player moves with WASD (by default) and travels at a speed determined by their class in **section 3.0** or sprinting with Shift for 25 percent more speed

The player crouches with C or CTRL (defaults), sending the player to 55 units tall, from 120 units tall. As such, most game world cover should be 55 to 90 units tall.

All classes have 100 stamina.

The Vanishing Act class may "springboard" onto the Anarchist class. For more information see sections **3.1 Vanishing Act** and section **2.3 Team Mechanics**

2.2 Shooting

All weapons have the following stats:
- Damage per projectile
- Rate of fire
- Magazine Capacity
- Reload time
- Velocity
- Velocity loss per second
- Damage loss per second
- Area of effect
    - For explosives only
- Bullets per shot
    - For weapons such as shotguns
- Recoil
- Maximum Clips

Players fire weapons with LMB (default) and reload with R (default). With every shot smoke is on the end of a player's weapon and a shell is thrown out the appropriate area. Large flashes may give some weapons away.

The player may give a melee attack with RMB (Default).

The player may use the flashlight by pressing F (default), but if shone on an enemy, they detect the player automatically.

2.3 Team Mechanics

Springboard

With no speed or mobility penalty to the Anarchist, a Vanishing Act may, without consent of the Anarchist jump onto the back of the Anarchist by holding the Space key while facing the Anarchist and spring up by pressing Space again. The Vanishing Act then adopts the forward momentum of the Anarchist + (moving *as binary**20). This

means that the Vanishing Act can have a maximum of 140 units/second and minimum of zero for straight up springboarding.

This mechanic is beneficial in multiple ways:

- The Ally is able to moved faster and circumvent or help team mates through chokepoints and other areas of difficulty.
- If the Ally needs mobility, they are able to jump to ledges and reach areas before the other classes, and combined with cloaking or other specialised ability, a chain of abilities is possible.

Ammo Sharing

Sentinels can carry more Ammo than other classes and the Anarchist can carry more explosives than other classes.

To request more ammunitions or explosives a player may tap V to request ammo or B to request Explosives. To meet a request, a player may hold V to give ammo or B to give explosives.

During game play ammo and explosives are highlighted on allied players, their ammo belt or explosive belt glows with a colour between green and red to indicate how much of that resource is owned.

Dependant on the status of the team's stealth, there are different noises, such as whispers and the animation runs at a ever so slightly slower speed. While this has no real effect on stealth, it is a nice immersive touch if implemented.

In multiplayer, when sharing is requested, the relevant belt flashes for all players to see, whether friendly or not to draw attention to the deficit.

This mechanic encourages players to help their teammates at all times, not just when requested. To further encourage players to share ammo if the player has more clips in current stock –not more ability to carry-, there is a visual cue, such as a highlighted clip or a tool tip, indicating that the player has excess clips than the normal, making sharing less like a sacrifice and more like a convenience.

Sharing ammo also gives 1 teamwork point in versus multiplayer.

Shielding

The sentinel is able to tap and hold E to shield an area until the second tap/hold is released. This however is two way, and consumes energy (10 energy/second). When this ability is used, a semi-transparent Plane is placed between the enemies and the team, stopping the team from taking damage. This shield is a plane of width 180 units and height 120 units.

The reason for this size is that it allows to shield allies without having to implement an AI behaviour to stay behind the shield. Similarly, with such an AI behaviour, allies would not understand that even if the player moves in his intended direction head on, he would cease to strafe and they would be exposed and look stupid simultaneously.

Grappling/Vanish Act

While not a directly helping the team, grappling allows the Anarchist to support his allies.

When the player grapples, the AI buddies will hold their positions unless reordered to follow the player. They will still remain in their position if they cannot reach the player, regardless of command.

Enemies in the area of 200 units^2 about the grapple point will attack the player regardless of their previous target.

See Section **3.3** for more details

2.4 Selection

Of Character

The player chooses from the three characters with different specialities on the menu, in the character setup window. They can also modify their player name, weapon loadout, and other attributes. These apply as soon as the player respawns.

Of Weapons

In the campaign game mode, all player attributes chosen in the character setup apply except for the weapons, which only apply in versus mode. The player must make choices about the loadout they want, because certain firearms may be harder to obtain.

In versus mode, the player can use the character setup menu to choose their weapons. The weapons available are based on which weapons the player picks up in the campaign mode.

Note To Team: The first mission should provide a vast variety of ranges and dynamicness to introduce the player to the possibilities and help decide what weapons they'd rather have.

2.5 Health

The character healths are recorded in **section 3.0**. This section is about the loss, recovery and representation of health.
Note: Filling this section later – Dave

2.6 Cornershot

The cornershot allows players to shoot around corners.

3.0 Classes

All classes have a maximum of 100 stamina and 100 Energy.

Dependant on the side in multiplayer, the models and colour schemes are different.

3.1 Vanishing Act

The Vanishing Act is an offensive class, suited to taking the flag or completing objectives.
The Vanishing Act has a standing run speed of 120 units/second and a sprinting speed of 160 units/second. They have a 80 units/second movement speed if crouched. They use their stamina at 5/second.

The Vanishing Act has 75 HP.

Vanish Act
The Vanishing Act is able to go invisible for short periods of time by Tapping and holding E, being invisible, this would require a shader, which would need to be applied to the weapon and player model. Invisibility drains energy at a rate of 5 energy per second

3.2 Sentinel AKA Horatio

As a synonym of Guard, the Sentinel is mainly a defensive class.

Sentinels have a standing run speed of 100 units/second and a sprinting speed of 120 units/second. They have a 60 units/second movement speed if crouched. They use their stamina at 7.5/second

The Sentinel has 100 HP.

The sentinel can carry 10 percent more ammo for whatever weapon they use.

Shielding
The sentinel is able to tap and hold E to shield an area until the second tap/hold is released. This however is two way, and consumes energy. When this ability is used, a semi-transparent Plane is placed between the enemies and the team, stopping the team from taking damage. This ability drains energy at the rate of 7/second

3.3 Anarchist

The Anarchist is neither defensive nor offensive and is suitable to be used for any task.

Anarchists have a standing run speed of 100 units/second and a sprinting speed of 120 units/second. They have a 60 units/second movement speed if crouched.

The Anarchist has 200 HP.

Grappling
The Anarchist has the grapple ability, which allows them to move to points inside a base which are further than their current position. Grappling positions are marked with a distinguishable X and/or a grappling point looking thing. When grappling the player moves at a maximum speed of 200 units/second. Thus the player gets to the tops of structures quickly. At the start and end of the grappling, there is a small 2 second period

at start and at the end in which the player loses all the speed at a speed of 100 units/ second.

To grapple, the player must aim at a location marked with an X and double-tap E and fire at the location. Double-tapping E draws the grapple gun, while firing—fires.

Grappling does not count as a detection/loss of stealth unless the player is within 120 units of an enemy and passes their line of sight.

The Grappling Device may be used as a short range weapon, only effective at the range of 120 units, and only dealing 30 Damage.

The Anarchist carries 5 extra explosives than other classes.

4.0 Environments

As proposed by thenerd for single player:
"There will be 14 levels in the campaign, one level for every day closer to the bomb going off. The levels will be a mix of outdoors and indoors. "

As posted by thenerd:
"For levels, what do people think, should the be set in a city or what I was thinking, the enemy military base hidden deep in the jungle."

Reply by Monk:
"Both, the variety is good and is better than just one place. You could even have an overgrown city as the bosses base that has trees and city structures."

As proposed by Dared1111
"A bit of city, a bit of the countryside, some snowy mountain base, some dark laboratory, a tad of destroyed village"

Reply by Monk
"The countryside can have hills trees, meadows etc lots of animals.
City can have buildings, construction sites, traffic, pedestrians (unless run away), pylons? Could even have some bank robbers etc ,police, the works.
Destroyed village could have a mine shaft that needs to be explored or other hidden passage.
Dark lab could be part of snowy base, breath would show up to make it even harder to see in dark. Sort of a more scary scene. "

Reply by thenerd
"that is a good idea, though if we mix it up too much the levels will be inconsistent and random. You could do that by having the player have to fight across the enemy country to get to the base."

4.1 Clutter

Clutter objects that are suitable to the environment are procedurally inserted to the environment.

4.2 Ambience

If an area is being revisited, then flies will be over corpses, this effect achieved with a plane or planes and a texture with transparency.

All areas should be light mapped.

All areas should have appropriate background sounds, such as birds.

Outdoor regions should have fog at the correct distance for the correct effect.

Note to Team members: Models and levels may be created on any 3D technology that you frequently use, as long as you export -or convert in a reliable converter- to .x format with an appropriate polycount.

4.3 General Level Design Guidance

This section should not be considered policy, rule or even a point of argument. If level designers have a better way, it should be used by all means. Due to the open source nature of the project, level designers are encouraged to try new things.

Level designers should encourage players to learn and experiment with mechanics using psychological tricks including but not limited to:

- o Power of Suggestion
- o Emphasising environmental features (ledge is longer than needed, tower is taller than necessary)

Level designers should help players naturally know their way by:

- o Attracting attention with moving parts
- o Avoiding unnecessary lighting
- o Make sure all boundaries and no-go zones are marked with fitting
- o Putting lighting and/or texture differences in geometrically symmetric areas
- o Making areas look important (Why's the turret active? Why does this room look so)

Areas should hold up to their appearances, unexpected lack of reward can cause lack of motivation. Areas should have weapons scattered about. Players don't always know what weapons to choose unless the area is called (Sniping Heights).

4.4 Physics

Xeno Physics, a Havok physics wrapper being developed by Xarshi, is being used for physics. However, because the physics plugin is currently unstable, this section will remain blank until it can be filled in.

5.0 Game Modes

These game modes should and are in the document to be debated/eliminated/decided and are not intended to be absolutely decided.

5.1 Campaign Mode

Campaign mode is the main story mode, where a team of six fights through the entire plot. The game is designed so that the team always stays at six, as the slots not filled by real players are controlled by bots, and when a player joins, he/she takes the place of a bot.

5.2 Versus Mode

Versus Mode is the secondary mode, in which two teams fight each other. For now there is no real plot in this mode, however, we may take a "Terrorists vs. Counter-Terrorists" Counterstrike approach to Versus.

Versus Game Modes:

- **Extinction**
  Teams must fight to death. No respawns.
- **Team DeathMatch**
  Teams must fight until they reach a score limit or time limit, after which the winner is the team with the highest score.
- **DeathMatch**
  Players fight until one reaches a score limit or until the time limit is over, at which point a score board will be shown.
- **Last Man Standing**
  This mode is like Extinction, but without teams. The players are also allowed a set amount of lives.
- **Capture the Flag**
  Teams must capture each other's flags. The first team to reach a score limit wins.
- **Eliminator**
  In Eliminator, the rules for DeathMatch apply, but every host set amount of time, the player(s) with the lowest score is killed. Upon the Eliminator Sudden Death variable being set to 1, the fraction of players specified in the Eliminator Sudden Death Fraction, for example, if the variable is set to 0.3 and there are 10 players, the last 3 players fight to the death as if they were playing Extinction.
- **Team Eliminator**
  Team Eliminator works the same as Eliminator, but the team with the last person alive wins.
- **King of The Hill**
  In this mode, an area of the map is "the hill", the player gains a point for every amount of seconds as defined in the scoring timer variable

6.0 Weapons

As posted by Potassium on the 28th June 2009
"Here's a list:
-Shotgun
-MP40
-AK47
-SMG
-Assault Rifle
-Sniper Rifle
-Colt45
-G36E
-Rocket Launcher?
-Flame Thrower
-Mas 36
-Enfield"

As posted by thenerd on the 28th June 2009
"here is my list of weapons:
-Shotgun
-Sniper Rifle
-Rocket Launcher
-SMG
-Flame Thrower
-frag grenade
-thermal (explodes when it detects heat) "

As posted by Monk on the 28th June 2009
"If we're aiming for more modern.

L85A1 (I think thats what its called. A.k.a SA80)
HM 416 (Marine issue)
RPG / Javelin
Browning or Glock
AK47 - M4 - XM8 `assault
M40 - M99 - M82 `snipers
M240 `machine gun
frags and smokes
shotgun"

6.1 Weapons

Weapons are undecided yet, however, the guns will be realistic.

6.2 Weapon Categories

Use this section to add context to the second column on the table in section 7.0

1 Melee
2 Shotguns
3 Pistols
4 Special
       4.1 BioChem Gun
       4.2 Rocket Launcher
       4.3 Flame Thrower
5 Sniper Rifles
6 Assault Rifles
7 Machine Guns
8 Sub Machine Guns

7.0 NPC Enemies

Note: This section is incomplete, it will be filled in when we finish the plot.

Name	Weapon Categories	Move Speed (units per unit time) *(slowest- fastest)*	Health (HP) **(Subject to change)**	Areas of appearances **(This section to be added)**
BioSoldier	**4.1, 4.2, 7**	60-85	50	
Corrupted	1	*60-80 (Slow Variant)* **135-150 (Fast Variant)**	*90 Slow Variant* **35 Fast Variant**	
Sniper	5	100-120	40	
Soldier	2,6,7,8	*90-**110***	50	
Supersoldier	4,7	70-85	70	
Winter Flame Soldier	**4.3**	70- 80		
Winter Soldier	1,3,8	120-		

The Move Speed ranges exist to create variation in the possible speeds, as the maximum speed they may travel at. This creates variation in situations when the corrupted are encountered as some soldiers will escape easy but some will not seem so lucky.

8.0 Menu Tree

Main Menu

Loading

Chat

Campaign

Versus

Multiplayer Game Window

Chat Tab / Text Box

Versus Server / Game Select

Main Menu

Campaign Mode

Start On Campaign Tab

Campaign Server / Game Select

Versus Mode

Start On Versus Tab

Character Setup

Character Setup:
Model,
Name,
Weapon Loadout,
Ex.

Options

Options Window With Tabs

Control Options

Credits

Credits Window

Video Options

Quit

Scrolling 3d plain, leave blank for now

Audio Options

Are you sure you want to quit?

No

Yes

End