



# Doom Deconstruction

Analyzer:

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## Description

### High Concept

- Doom is a 3D first person shooter where the player uses a variety of different weapons to defeat a wide range of different enemies to reach the end goal and complete the level, which is one step closer to the ultimate goal of the game - clear all levels; to clear the levels, the player need to managing basic resources like health and different types of ammos, and adjust the shooting strategy based on enemy types and environments.

### Action/Verbs

- Look (at game objects, enemies, environment)
  - **Move the mouse around** to look around accordingly
  - Variant of this action:
    - Aim (at enemies or shootable game objects)
      - Move the aim to align with the enemies or shootable game objects, so that bullets will hit the enemies when shooting
- Shoot (enemies or other shootable game objects)
  - **Left click mouse button** to shoot with the current weapon in hands
  - Variant of this action:
    - Eliminate (enemies)
      - Shoot the enemy until the enemy's health reaches zero
    - Trigger explosion (with explosives)
      - Shoot explosive barrels to cause explosion
      - Shoot possessed engineer's fuel canister to cause explosion
    - Cut (enemies)
      - Cut enemy instead of shooting when the player is holding Chainsaw
    - Punch/tear (enemies)
      - Instant kill the enemy with fists while the player is in berserk mode
- Run (on ground)
  - **Press [W]/[A]/[S]/[D]** on the keyboard to move the player forward/left/backward/right
  - Variants of this action:
    - Fall (to ground)
      - Walk/run/jump to a place where the ground is lower or no ground below
    - Walk (on ground)
      - Move with a slower speed than running
      - Hold **[Shift]** while running to walk
    - Stand (on ground)
      - **Not press [W]/[A]/[S]/[D]**
      - Variant of this action:
        - Hide

- Stand behind a cover to avoid enemies' projectiles or sights
  - Absorb (enemy drops or pick-ups)
    - When move close even to enemy drops or pick-ups on the ground, the player will automatically replenish health, armor, and ammos, and absorb powerups accordingly
- Jump (through gap/to a higher place)
  - **Press [Space]** on the keyboard to jump
  - Variant of this action:
    - Ledge grab
      - When jumped not far enough to be on another platform, the player will automatically grab the ledge and get up that platform
    - Double jump
      - After getting Delta V Jump-Boots, the player can **press [Space]** to perform another jump in midair after the first jump
- Interact (with interactable)
  - **Press [E]** to interact with interactable when the prompt for interaction shows up
  - Variants of this action:
    - Press (button)
      - When the interactable is a button
    - Touch (touchscreen)
      - When the interactable is a touchscreen
- Crouch (on ground)
  - **Press [C]** to move the player upper body down
  - The player crouch to pass through narrow spaces or avoid enemy projectiles
- Throw (equipment)
  - **Press [Ctrl]** to throw the current equipment equipped, which will let the thrown object travel a certain distance
- Switch (general weapons)
  - **Scroll mouse wheel up/down, or press [X]/[Z]** to choose next/previous general weapons to hold
  - **Press [Q]** to get the previous used weapon
  - **Press [1]-[8]** to switch to a specific weapon
  - **Hold [Q]** to let the weapon selection UI pop up and then select a direction with mouse movement to switch to a specific general weapon
  - Automatically switch to next weapon when current weapon is out of ammo
- Switch (equipment)
  - **Press [F1]/[F2]** to choose next/previous equipment to equip
- Switch (to BFG 9000)
  - **Press [T]** to switch the current weapon to BFG 9000
- Switch (to Chainsaw)

- **Press [G]** to switch the current weapon to Chainsaw
- Switch (Weapon Mod)
  - **Press [R]** to switch to another weapon modifier on the current weapon
- Use (Weapon Mod)
  - **Right click/hold the mouse button** to use current weapon's modifier
- Melee (to hit enemies)
  - **Press [F]** to hit the enemy right in front of the player, and deal low damage to the enemy
  - Variant of this action:
    - Glory Kill
      - **Press [F]** near an enemy that is staggered (flashing orange) to instantly kill the enemy with special animation
- Show (Map/Upgrades)
  - **Press [Tab]** to let the UI about map or upgrades show up

### Core Game Mechanic(s)

- Movement
  - **Press [W]/[A]/[S]/[D]** to move the player forward/left/backward/right
  - **Press [Space]** to jump, and press again for another jump while in midair with Delta V Jump-Boots
  - **Press [C]** to crouch
- Move through one encounter to the next
  - Clear encounters to be able to complete a subobjective in the level
    - Complete the final objective in the level to finish the level
      - Clear all levels in the game to complete the game
- Delta V jump-boots
  - Allows the player to double jump



Figure 1: Delta V jump-boots. [1]

- Interactable
  - Buttons/touchscreen
    - Allows player to open locked door or trigger certain event



Figure 2: Touchscreen. [2]

- Explosive barrels
  - Explodes and deals damage to everything around (including the player if around) when shot by player



Figure 3: Explosive Barrel. [2]

- Gore nest
  - When activated, a lot of enemies will spawn



Figure 4: Gore Nest. [3]

- Portal
  - When walked into it, the player will be teleported to another portal connected to the one that the player is in contact with



Figure 5: Portal. [2]

- Field Drone
  - Allows the player to pick a new modifier for a weapon that the player has



Figure 6: Field Drone. [2]

- Corpse
  - Allows the player to pick the new weapon or key card

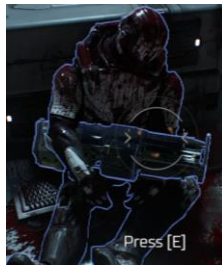


Figure 7: Corpse. [2]

- Broken door
  - Allows the player to crack open with force



Figure 8: Broken Door. [2]

- Health replenisher
  - Restores player's health to maximum



Figure 9: Health Replenisher. [2]

- Argent cell
  - Allows the player to choose upgrade either max health, armor, or ammo once
    - Up to five times in each category

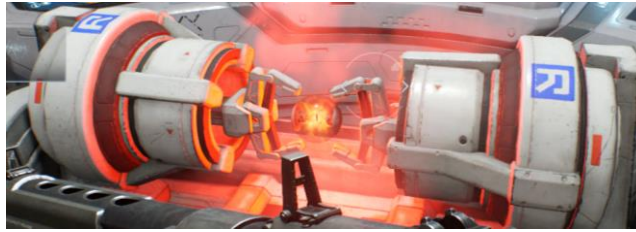


Figure 10: Argent Cell. [2]

- Elite guard corpse
  - Allows the player to pick up praetor token, which is for suit upgrade



Figure 11: Elite Guard Corpse. [2]

- Automap
  - Allows the player to access more information on map



Figure 12: AutoMap. [2]

- Pickups/supplies
  - Med kits
    - Small
      - +5 health



Figure 13: Med kit (small). [1]

- Medium
  - +25 health



Figure 14: Med kit (medium). [1]

- Large
  - +50 health



Figure 15: Med kit (large). [1]

- Armor
  - Bar
    - +5 armor



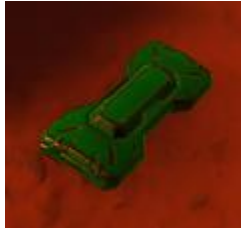


Figure 16: Armor (bar). [1]

- Shield
  - +25 armor



Figure 17: Armor (shield). [1]

- Chest plate
  - +50 armor



Figure 18: Armor (chest plate). [1]

- Ammo
  - Chainsaw
    - +3 ammo



Figure 19: Chainsaw Ammo. [1]

- Combat shotgun / Super shotgun
  - +8 ammo
  - +5 ammo (glory kill)



Figure 20: Combat Shotgun / Super Shotgun Ammo. [1]

- Plasma rifle / Gauss cannon
  - +30 ammo
  - +15 ammo (glory kill)



Figure 21: Plasma Rifle / Gauss Cannon Ammo. [1]

- Heavy assault rifle / Chaingun
  - +20 ammo
  - +10 ammo (glory kill)



Figure 22: Heavy assault rifle / Chaingun Ammo. [1]

- Rocket launcher
  - +5 ammo
  - +1 ammo (glory kill)



Figure 23: Rocket Launcher Ammo. [1]

- BFG-9000
  - +1 ammo
  - +1 ammo (glory kill)

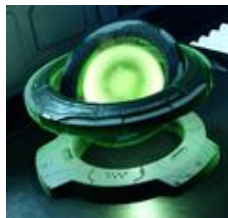


Figure 24: BFG-9000 Ammo. [1]

- Grenades
  - +1 ammo



Figure 25: Grenade Ammo. [1]

- Powerups
  - Haste
    - Significantly increase player's movement speed
    - Increase reload speed
    - Last 30 seconds



Figure 26: Haste. [1]

- Invulnerability
  - Allows the player to immune any damage
  - Last 30 seconds

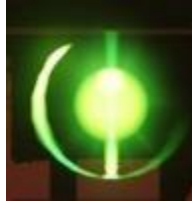


Figure 27: Invulnerability. [1]

- Quad damage
  - Multiple player's damage output by four
  - Last 30 seconds



Figure 28: Quad Damage. [1]

- Berserk
  - Allows the player to instant kill any enemies with fists
  - Last 30 seconds



Figure 29: Berserk. [1]

- Mega Health
  - Set player's health and armor to 200



Figure 30: Mega Health. [1]

- Weapons (data from gameswiki.net [4])

Name	Image	Damage		Effective Range	Ammo Size	Notes
Pistol	 <a href="#">Figure 31: Pistol. [1]</a>	20/(43-200) (charged)		Medium	Infinite	Can be charged up for higher accuracy and damage Need time to discharge
Combat Shotgun	 <a href="#">Figure 32: Combat Shotgun. [1]</a>	22-26/shell		Short	20/30/40/50/60	Medium reload time
Plasma Rifle	 <a href="#">Figure 33: Plasma Rifle. [1]</a>	25		Long	150/300/250/300/350	Splash damage 10
Heavy Assault Rifle	 <a href="#">Figure 34: Heavy Assault Rifle. [1]</a>	40		Long	90/120/150/180/210	
Rocket Launcher	 <a href="#">Figure 35: Rocket Launcher. [1]</a>	130		Long	15/20/25/30/35	Splash damage 0-350 Splash radius medium Damages the player Slow projectile speed Weak against fast enemies Long reload time Effective against both large enemy and enemies in crowd
Super Shotgun	 <a href="#">Figure 36: Super Shotgun. [1]</a>	40-60/shell		Close	20/30/40/50/60	Long reload time
Gauss cannon	 <a href="#">Figure 37: Gauss cannon. [1]</a>	80/650 (charged)		Long	150/200/250/300/350	Splash radius 128 Use ammo to charge up Medium reload time Effective against large enemy
Chaingun	 <a href="#">Figure 38: Chaingun. [1]</a>	19		Medium	90/120/150/180/210	Shooting speed gradually increase to maximum when starts firing
Chainsaw	 <a href="#">Figure 39: Chainsaw. [1]</a>	Instant kill		Melee	3/4/5/6/7	Ammo cost per kill depends on enemy type Stronger enemy costs more ammo Cannot use on bosses
BFG-9000	 <a href="#">Figure 40: BFG-9000. [1]</a>	6000		Close	3	Does damage in a large radius Slow projectile speed Medium reload time

- Mods & Weapon Upgrades (descriptions from doomwiki.org [1])
  - Pistol
    - Upgrade
      - Charge Efficiency
        - Decreases charge time for a charged shot
          - From 1500ms to 1000ms
      - Quick Recovery
        - Decreases the cool-down time required after a charged shot
      - Light Weight
        - Enables faster movement while charging
      - Mastery - Increased Power
        - Charged shots do more damage
          - 53-320
    - Combat Shotgun
      - Explosive Shot
        - Launches a grenade
        - Upgrades
          - Speedy Recovery
            - Reduces cooldown
          - Bigger Boom
            - Increases the area of effect
          - Instant Load
            - Removes cooldown between each explosive shot
          - Mastery - Cluster Strike
            - When hit an enemy directly with grenade more damage will be dealt
      - Charged Burst
        - Shoot three times in a row
        - Upgrades
          - Speedy Recovery
            - Reduces mod's cooldown
          - Rapid Fire
            - The three shoots will be faster
          - Quick Load
            - reduces load time
          - Mastery - Power Shot
            - Increases the next shot's damage when all three shots hit
    - Plasma Rifle
      - Heat Blast
        - Knock back enemies and deal damages




- Needs recharge
  - Upgrades
    - Super Heated Rounds
      - Reduces cooldown
    - Improved Venting
      - Reduces recovery time
    - Expanded Threshold
      - Increases damage
    - Mastery - Heated Core
      - Charges automatically
  - Stun Bomb
    - Stuns targets within the discharge
      - Has cool down
      - Effective against large enemy
    - Upgrades
      - Quick Recharge
        - Reduce cooldown between stun bombs
      - Big Shock
        - Increase range
      - Larger Stun
        - Longer stun
      - Mastery - Chain Stun
        - Kill a stunned enemies will trigger another explosion
  - Heavy Assault Rifle
    - Micro Missiles
      - Fire six explosive missiles
        - Upgrades
          - Ammo Efficient
            - Decreases ammo usage
          - Advanced Loader
            - Reduces reload time
          - Quick Launcher
            - No activate time
          - Mastery - Bottomless Missiles
            - No reload time
      - Tactical Scope
        - Allows the player to zoom in for higher accuracy
        - Upgrades
          - Uranium Coating
            - Zoom shots pierce enemies
          - Skull Cracker






- Zoom headshots do more damage
  - Light Weight
    - Increases movement speed while zooming
  - Mastery - Devastator Rounds
    - Increases damage
- Rocket Launcher
  - Lock-On Burst
    - Launch three homing missiles
      - Homing missiles does 1/3 damage
    - Upgrades
      - Quick Lock
        - Reduce aim time
          - This mod will become effective against boss
      - Faster Recovery
        - Reduces recovery time
      - Mastery - Multi-Targeting
        - Allows missiles targeting different enemies
  - Remote Detonation
    - Can manually trigger explosion midair
    - Upgrades
      - Improved Warhead
        - Increases explosion damage
      - Jagged Shrapnel
        - Explosion causes enemies to take damage over time
      - Mastery - External Payload
        - Missile will not be destroyed when manually triggered
- Super Shotgun
  - Faster Reload
    - Reduces reload time
  - Uranium Coating
    - Pierce enemies
      - Very effective against crowds of enemies
  - Mastery - Double Trouble
    - One extra shot before reloading
- Gauss cannon
  - Precision Bolt
    - Increases long-range accuracy. Allows longer charge and increase projectile's velocity
      - A fully charged shot can pierce multiple targets
  - Upgrade
    - Energy Efficient









- Decreases recharge time
    - Light Weight
      - Increases movement speed while zoomed in
    - Mastery - Volatile Discharge
      - Enemies killed with the precision bolt will explode
  - Siege Mode
    - adding a beam effect to the kinetic projectile
      - The user must stay stationary when charging this firing mode
      - piercing multiple targets
      - the beam will also create a blast effect upon impact
    - Upgrades
      - Outer Beam
        - Increases the area-of-effect damage for siege mode shots
      - Reduced Charge
        - Decreases charging time
      - Mastery - Mobile Siege
        - lets play moves while charging
- Chaingun
  - Gatling Rotator
    - Let the chaingun to increase fire speed without wasting ammo
    - Upgrades
      - Improved Torque
        - Decreases spin-up time
      - Uranium Coating
        - Shots penetrate enemies
      - Mastery - Incendiary Rounds
        - Increases damage at max fire speed
  - Mobile Turret
    - Doubling the weapon's firing rate
      - slows the user down significantly
      - The gun shutdowns for a period after firing constantly for a while
    - Upgrades
      - Rapid Deployment
        - Decreases spin-up time
      - Uranium Coating
        - Shots penetrate enemies
      - Mastery - Ultimate Cooling
        - No longer overheat

- Enemies (Data from snapwiki.doom.com [5])

Name	Image	Health	Damage	Chainsaw Ammo Cost	Note	Strategy
The Possessed	 Figure 41: The Possessed. [1]	150	15-20 (melee)	1	Speed slow	Keep moving
Imp	 Figure 42: Imp. [1]	150	15-25 (long range) 7-8 (melee)	1	Speed fast Can jump and cling on walls Fireballs can be charged Slow missile speed	Use high projectile speed weapon Dodge fireballs
Possessed Gunner	 Figure 43: Possessed Gunner. [1]	400	10 (melee) 5/20 (charged) (medium range)	1	Medium missile speed Speed medium	Keep moving
Possessed Engineer	 Figure 44: Possessed Engineer. [1]	150	0-40 (melee) (explode)	1	Speed slow	Shoot the canister from far away with medium/long range weapon
Possessed Security	 Figure 45: Possessed Security. [1]	500	15/20 (charged) (melee) 6-18 (short ranged)	1	Speed slow Shield changes color as it breaks Shield refreshes after a short time	Shoot the backside of the enemy Use chainsaw

Hell razer	 Figure 46: Hell razer. [1]	600	10 (melee) 37-38 (long ranged)	1	Need to charge shot for a long time	Need to deal with first, keep moving to avoid the laser
Hell Knight	 Figure 47: Hell Knight. [1]	1800	25 (charging/swipe) 30-35 (ground pound) (melee)	3	Melee only	Jump away when the enemy gets close Use close range weapon
Summoner	 Figure 48: Summoner. [1]	1400	? (long ranged)	3	Summon new enemies continuously	Need to deal with first Use chainsaw
Revenant	 Figure 49: Revenant. [1]	1600	20 (melee) 10 per rocket 20 per charged rocket (ranged)	3	Can fly for a short duration	Use weapon with good accuracy and long range
Unwilling	 Figure 50: Unwilling. [1]	150	15-20 (melee)	1	Same as the possessed	Same as the possessed
Lost Soul	 Figure 51: Lost Soul. [1]	75	25 (melee) (explode)	/	High speed	Eliminate before the enemy notices the player

Cacodemon	 Figure 52: Cacodemon. [1]	2000	66 (melee) 35 (medium ranged)	3	Fly in the air	Use high damage long range weapon
Pinky	 Figure 53: Pinky. [1]	1,000	25 (melee) 30-35 (charged)	3	Charges at the player High speed	Keep moving and dodge the charge, and then use high damage short ranged weapon
Mancubus	 Figure 54: Mancubus. [1]	2500	14-25 (melee 1) 35 (melee 2) 25 (ranged 1) ? (ranged 2)	5	Flames damages based on distance	Keep distance, use long distance high damage weapon, hide when enemy shoots
Baron of Hell	 Figure 55: Baron of Hell. [1]	3500	25/35/50 (melee)	5	Medium speed	Stronger version of hell knight Similar strategy
Spectre	 Figure 56: Spectre. [1]	2000	25 (melee) 30-35 (charged melee)	3	High speed	Stronger version of pinky Similar strategy
Cyber-Mancubus	 Figure 57: Cyber-Mancubus. [1]	3500	14-25 (melee 1) 35 (melee 2) 25 (ranged 1) ? ) (ranged 2)	5	Shoots acid pools, damage based on time spend in acid Lasts 4-6 seconds	Stronger version of mancubus Similar strategy

- Bosses (Doom.fandom.com [3])
  - Drops health and ammo when health drop below threshold
  - Rocket launcher and gauss cannon are generally effective against bosses
  - Types
    - Cyberdemon
      - Rocket barrage
      - Rush
      - Melee
      - Laser Canon
      - Hell Wave
      - Demonic sword



Figure 58: Cyberdemon. [1]

- Hell Guard
  - gigantic
    - Abilities
      - Mace
      - Staff
      - Fireball
      - Flamethrower
      - Wave of Hell Energy



Figure 59: Hell Guard. [1]

- Spider Mastermind
  - gigantic
    - Abilities
      - Melee
      - Lasers
      - Ground Corruption
      - Plasma Autocannon
      - Telekinesis (in second stage)



Figure 60: Spider Mastermind. [1]

- Equipment
  - Can be throw out
    - Long range
  - Recharges after use
  - Types
    - Frag grenade
      - Deal damage in a radius
      - Also damages the player
      - An indicator will show up when the grenade is close enough to damage the player



Figure 61: Frag Grenade. [1]

- Hologram
  - Creates a temporary player hologram that shots plasmas when enemy getting close
    - Attracts enemies
    - Plasmas do no damage







Figure 62: Frag Grenade. [1]

- Siphon grenade
  - Deals damage in a radius over time, and damage dealt is transferred to player's health











Figure 63: Siphon Grenade. [1]

- Runes (Chart from DoomWiki.org [1])

Sigil	Ability	Mastered Ability
 <p>Figure 64: Sigil 1. [1]</p>	Increases range for enemies drops	More range
 <p>Figure 65: Sigil 2. [1]</p>	Increases enemies' stagger duration	Longer duration
 <p>Figure 66: Sigil 3. [1]</p>	More enemy drops	Enemy can drop BFG ammo
 <p>Figure 67: Sigil 4. [1]</p>	Equipment become more powerful	More powerful



 <p>Figure 68: Sigil 5. [1]</p>	<p>Can glory kill at a further distance</p>	<p>Even further</p>
 <p>Figure 69: Sigil 6. [1]</p>	<p>Faster glory skill</p>	<p>Even faster</p>
 <p>Figure 70: Sigil 7. [1]</p>	<p>Increase air control after double jump</p>	<p>Increase air control after jump</p>
 <p>Figure 71: Sigil 8. [1]</p>	<p>Glory kill drop armor</p>	<p>More armor per drop</p>

 <p>Figure 72: Sigil 9. [1]</p>	<p>Move faster for a while after glory kill</p>	<p>Longer duration</p>
 <p>Figure 73: Sigil 10. [1]</p>	<p>Easier to glory kill</p>	<p>Even easier</p>
 <p>Figure 74: Sigil 11. [1]</p>	<p>With full armor, shots cost no ammo</p>	<p>Lower the requirement to 75 armor</p>
 <p>Figure 75: Sigil 12. [1]</p>	<p>Player can revive once upon death</p>	<p>Revive one extra time</p>

- Suit Upgrade (Charts from DoomWiki.org [1])
  - Environmental Resistance

Ability	Tokens required	Description
Hazard Protection	1	Reduce environmental damage and explosive barrel damage
Self Preservation	2	Reduce damage from player oneself
Barrels O' Fun	3	No longer take damage from explosive barrel

- Area-Scanning Technology

Ability	Tokens required	Description
Item Awareness	1	Automap reveals more secrets
Secret Sense	2	Automap provides cue when near secret
Full View	3	Secrets are always displayed

#### Equipment System

Ability	Tokens required	Description
Quick Charge	2	Reduce equipment cooldown
Stock Up	3	Increase equipment's charge
Rapid Charge	4	Reduce recharge time

#### Powerup Effectiveness

Ability	Tokens required	Description
Power Surge	1	After powerup buff ends, deals damage around

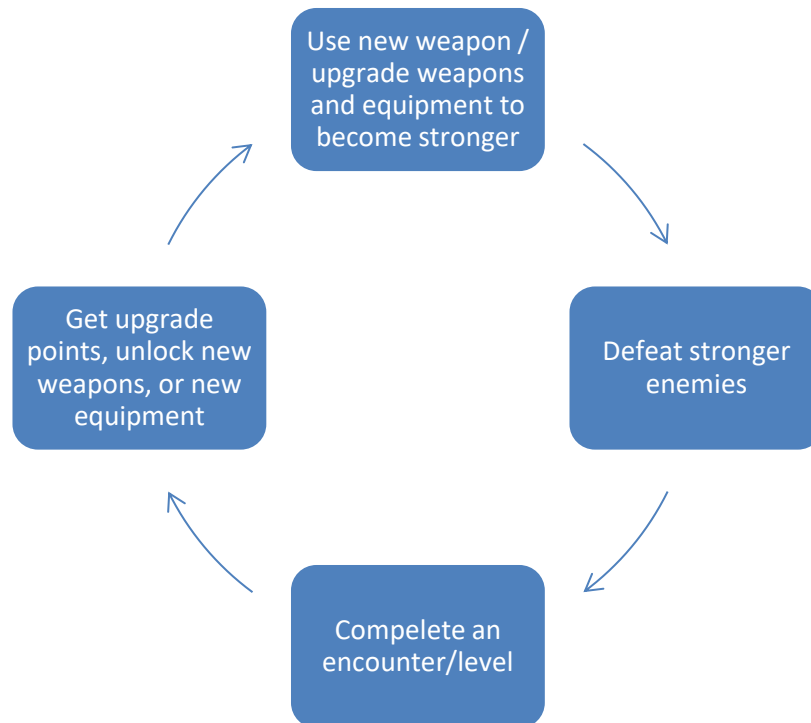
Healing Power	2	Restore health to maximum after getting powerup
Power Extender	3	Increase powerup duration

## Dexterity

Ability	Tokens required	Description
Adept	2	Reduce weapon switching time
Quick Hands	3	Increase ledge grabbing speed
Hot Swap	4	Reduce mod switching time

## Game Loops

- Core Loop
  - Shooting and eliminating enemies while advancing forward on the map
- Secondary Loop
  - Getting ammos, armor health pickups on ground and from enemies drops
  - Completing an encounter by eliminating all enemies
  - Completing a level (chapter) by reaching the end goal in the level after completing all encounters
  - Collecting different weapons, weapon mods, and upgrade points in level to grow the player's arsenal and make the player stronger to face stronger enemies
- Tertiary Loop
  - Complete the game by clearing all levels (chapters)



## Conveyance/Affordances

- Consistency
  - Game objects have the same form throughout the game
    - E.g., doors broken in a certain way can always be opened with force



Figure 76: Broken Door [2]

- Color
  - Each color has a consistent implication
    - Green
      - Safety
        - indicates a door is unlocked or an elevator is arrived



Figure 77: Elevator Indicator [2]

- the player is on the right track, and show the player where to go next

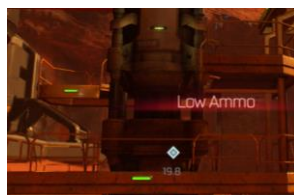


Figure 78: Low Ammo [2]

- armor indicator



Figure 79: Arm Bar. [2]

- armor pick-ups

- Blue
  - Health
    - Health bar



Figure 79: Arm Bar. [2]

- Health pick-ups
- Health replenisher



Figure 80: Health Replenisher. [2]

- Interactable
  - Touchscreens



Figure 81: Touchscreen. [2]

- Red
  - Danger
    - Dangerous environment

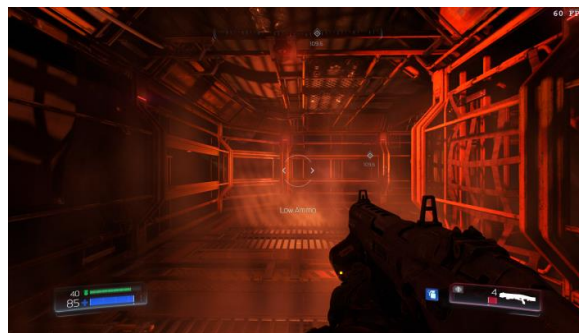


Figure 82: Dark Red Environment. [2]

- Enemy's appearances and special effects



Figure 83: Enemy. [2]

- low ammo indicator

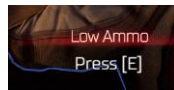


Figure 84: Low Ammo Indicator 1. [2]



Figure 85: Low Ammo Indicator 2. [2]

- Locked door

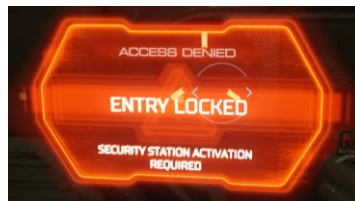


Figure 86: Locked Door. [2]

- Player getting hurt
- Explosive barrels



Figure 87: Explosive Barrel. [2]

- Yellow
  - Main for framing
    - Makes paths pop out more





Figure 88: Yellow for Framing. [2]

- Color contrast
  - The background color in the game is generally very dark, which contrast well with green (for player path guidance), light blue (for health and interactable), and yellow (for framing)



Figure 89: Different Colors. [2]

- Blue and orange are complementary colors in are obvious with dark background, and they are used for glorious kill indicator



Figure 90: Glory Kill. [2]

- Lines
  - Lines (usually yellow in early levels) guide the player where to go

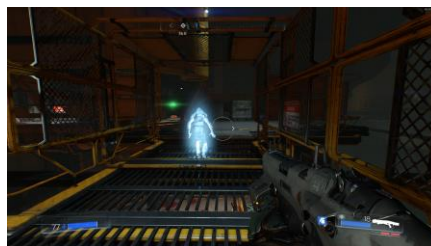


Figure 91: Yellow Lines. [2]

- Interactable objects are outlined, so the player can see better

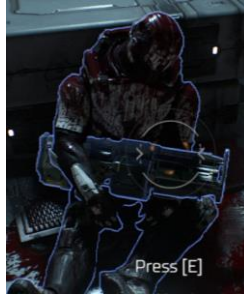


Figure 92: Outlined. [2]

- Framing
  - Mainly use yellow lines and doors (in early levels) for framing
    - The view inside/outside door is at the center of the screen drawing the player's attention



Figure 93: Framing. [2]

- Form follows functions
  - The form of a game object suggests its function
    - Drops are spherical and health pickups are cylinders suggesting its harmless and safety
    - Ammos are box shaped suggesting its solidity in gameplay
    - Strong armor pickups look like a chest plate or a shield



Figure 94: Chest Plate Armor. [2]

- Enemies that are small and have long limbs suggest their quickness but do not have a lot of health
- Enemies that are giants are generally less flexible but have a lot of health and deal a lot of damage
- Motion
  - flashes draw attention
    - The low ammo indicator
    - The staggered enemy status
    - The sparks in front of a critical path



Figure 95: Spark. [2]

- Moving objects draw player attention
  - Enemies
  - Moving train

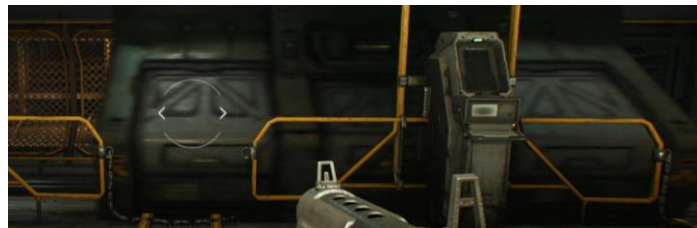


Figure 96: Moving Train. [2]

- Light
  - Generally, in a narrow space, like a hallway, the two sides are dark, but the hallway is always lighted to draw player's attention



Figure 97: Light in the middle. [2]

- Enemies' eyes emit lights to draw player's attention



Figure 98: Enemy's eyes. [2]

- Important doors are lit with artificial lights



Figure 99: Lit Door. [2]

- Openings attract
  - The game uses a lot of doors and caves to guide the player where to go



Figure 100: Open Attract. [2]

- Gates & Valves
  - The game locks the player from enter a place before completing a certain objective and prevents the player from going to a place after completing a certain objective, so that the player is less likely to get lost



Figure 101: Gates & Valves. [2]

- Breadcrumbs
  - Mainly using enemies as breadcrumbs, something using pick-ups, to guide and notify the player is on the right track
    - If enemies start spawning, the player knows that the player is on the right track

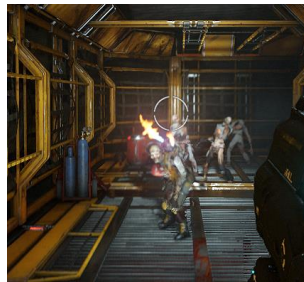


Figure 102: Enemies as Breadcrumbs. [2]

- Audio
  - Some enemies scream, and the player could tell the direction of the enemies from the screams, so that the player knows that there are still enemies to kill there, suggesting where the player should go next
- Narrative
  - The voice communication in the game tells the player where to go
  - The locked door system shows a projection of an entity to guide the player



Figure 103: Projection. [2]

- UI
  - The game has a map with objectives and a navigation system showing how far away the objective is and in which direction



Figure 104: Map UI. [2]

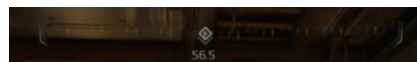
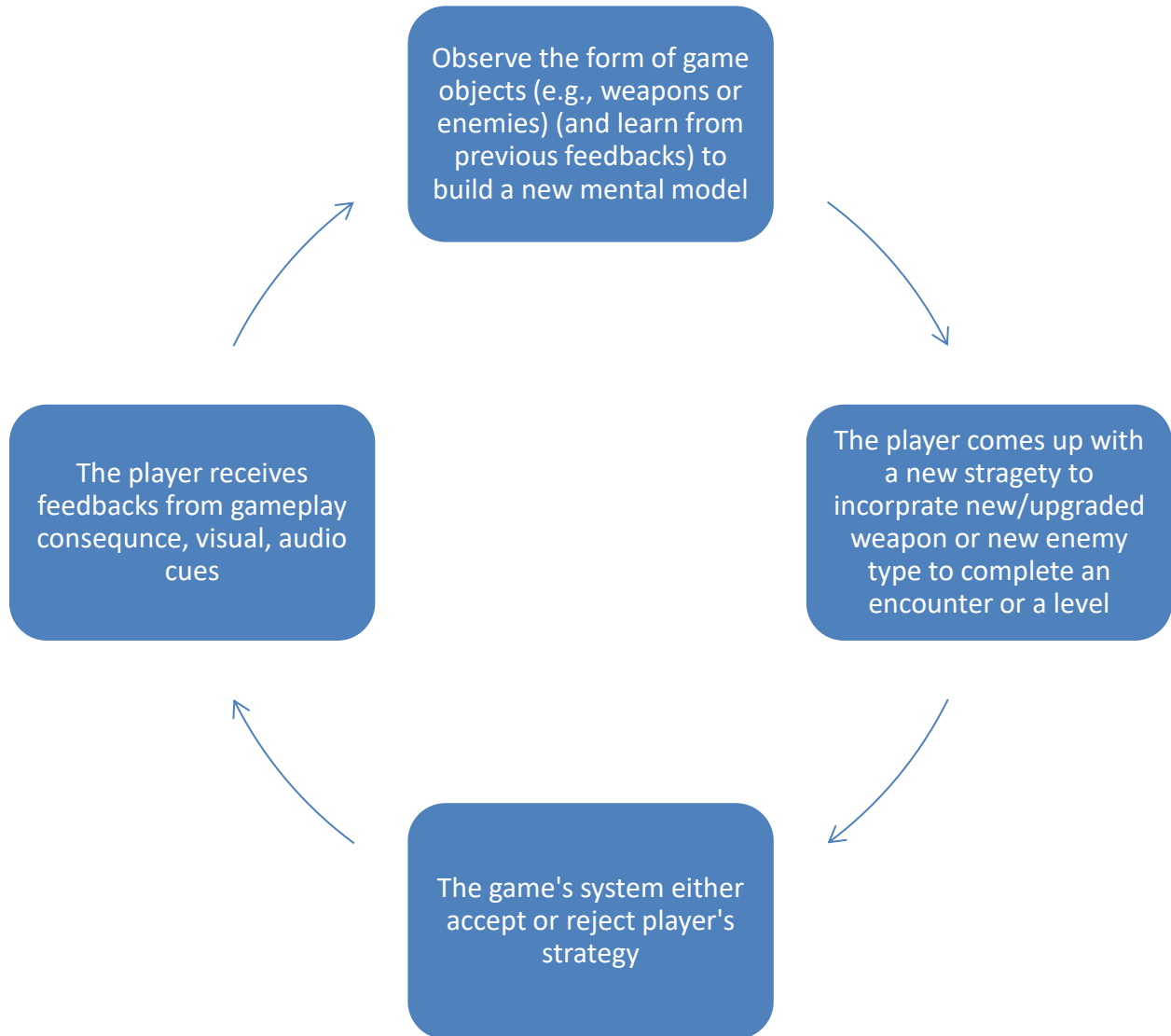


Figure 105: Navigation System. [2]

## Feedback Loops

- The player has a mental model about what a certain game object (weapons, equipment, enemies, or other game objects) would do by observing the game object's form, and the player will perform an action with a desired outcome in mind
  - E.g., this gun is huge, so the player thinks it can deal a huge amount of damage to the enemies
- The player performs the action
  - E.g., the player shoots the enemies with BFG 9000
- The game system either accepts or rejects the player's understanding of the game object with feedbacks
  - If rejected
    - Negative feedback
      - Gameplay
        - Player gets hurt, die, or fail to complete the encounter
      - Visual
        - Screen flashes red
          - When health is low
          - When player gets hurt
          - When ammo is low or completely out of ammo
      - Audio
        - Alerting or uncomfortable sound

- If accepted
  - Positive feedback
    - Gameplay
      - Player successfully completes the encounter or the level
        - Shows that the player is on the right track
    - Visual
      - Things turn green from red
        - Locked door gets unlocked
      - Cool animation as reward
        - The players get to see cool animation when performing a glorious kill
    - Audio
      - Satisfying sound
        - When the player picks up health, armor, ammos, upgrade points, or other collectibles
        - When unlocks a locked door
      - Alerting sound stops
        - When finishes an encounter
  - E.g., BFG 9000 eliminates a group of enemies with a lot of health with a single shoot
- The player will incorporate the feedbacks, and build a modified mental model, and this cycle will repeat
  - E.g., the player now knows that the big gun (BFG 9000) does not only does a huge amount of damage but also deals damage in a huge area





## Deconstruction (Level 2: Resource Operations)

### High Concept of Level

- The player will reach the end goal of the level by completing several subobjectives, including restore the power, find the yellow key card, destroy the nest, and finally go to the terminal; the player needs to complete the subobjectives by backtracking, platforming, door unlocking, but mainly through clearing stronger enemy encounters with introduced new weapon, equipment, etc...

### Introduced Mechanics

- Mission Challenge
- Possessed Engineer
- Chainsaw
- Heavy assault rifle
- Powerup
  - Berserk powerup
- Possessed Security
- (Optional) Mod switching
- Argent cell

### Reinforced Mechanics

- Possessed scientist/worker
- Possessed gunner
- Imps
- Shotgun

### Introduced Actions/Verbs

- Cut (enemies)
  - Cut enemy instead of shooting when the player is holding Chainsaw
- (Optional) Switch (Weapon Mod)
  - **Press [R]** to switch to another weapon modifier on the current weapon
- Shoot (with rifle)
- Trigger explosion (by shooting possessed engineer's fuel canister)

## Flow

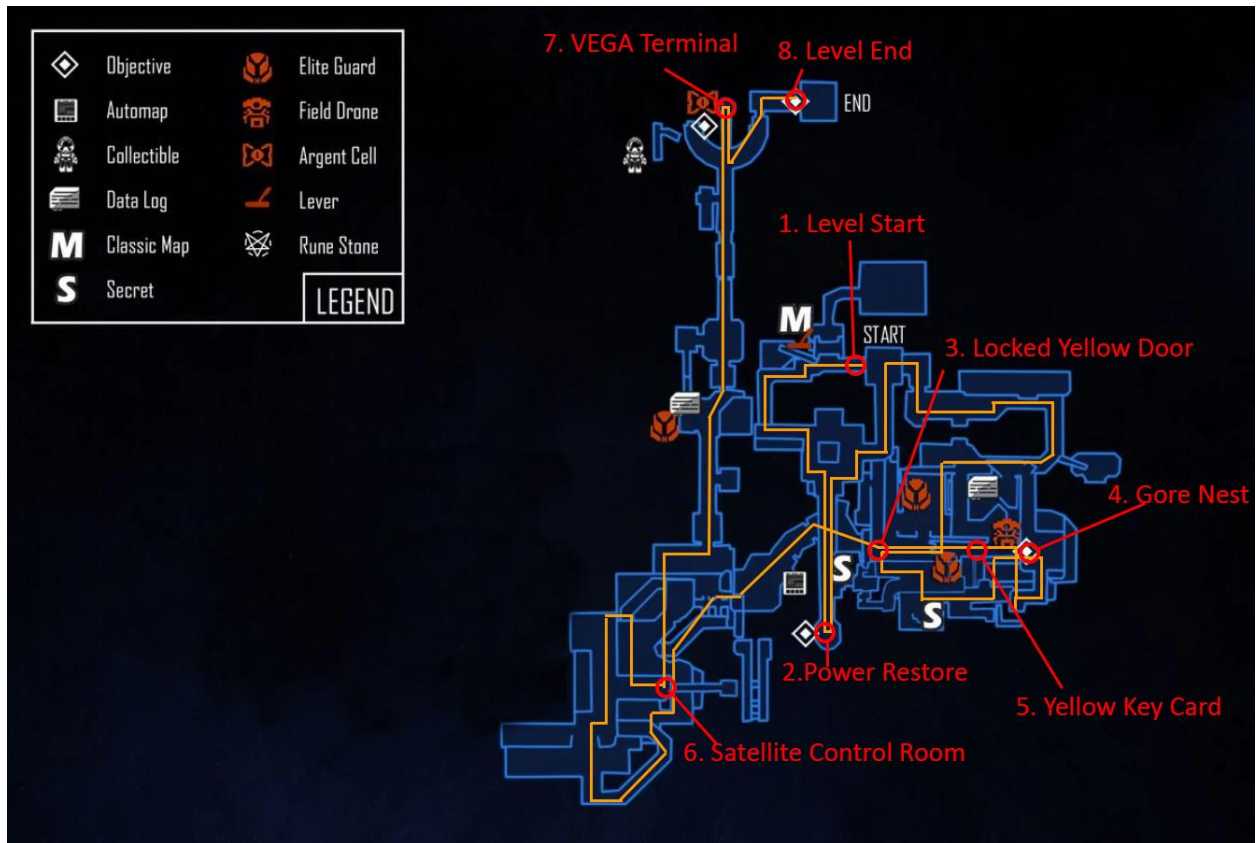


Figure 106: Flow. [6]

- Flow Summary
  - The player starts the level at level start (1)
  - The player passes through hallway and find the maintenance bay door at the hub place is out of power
  - The player gets to power restore location (2) and restore the power
  - The player backtracks to the hub place and go down one floor through maintenance bay door
  - The player finds the locked yellow door (3) and looks for the key
  - The player enters a small entrance and goes to the gore nest (4)
  - After destroying the gore nest, the player takes the elevator and goes up to get the yellow key card (5)
  - The player goes through a shortcut and drops down to the locked yellow door's location and unlocks the door
  - The player goes to the outside and traverse to an elevator in another building
  - The player takes the elevator and reaches the satellite control room (6) and realigns the satellite
  - The player backtracks to the outside, and performs some platforming to get to another entrance

- The player enters the entrance, and reaches the end of hallway, which is the VEGA satellite (7)
- After the voice communication, the player goes to the end of level (8) and exits
- Overall, the flow resembles a lowercase “b” shape
  - The player starts at the middle of the map, goes right and down, then left, and then up

## Pacing

- The player starts at level start (1)
  - Introduced with mission challenge at the start
  - Greeted with red ominous atmosphere in the hallway
- After the hallway, an encounter at the hub
  - Encounter 1
    - Wide space
    - A couple of possessed
    - Then a few imps
    - Has explosive barrels
- After found out of power, the players enter a hallway
  - Encounter 2
    - Narrow space
    - 2 possessed, 1 imp
- The player restores the power, and has a preview of where to go later
- After restored the power, another encounter at the hub
  - Encounter 3
    - Wide space
    - 3 possessed
- Dropping down to the lower floor
  - Encounter 4
    - Medium space
    - 2 imps
    - Then 2 imps, 2 possessed
- After cracking the broken door open
  - Encounter 5
    - Narrow Space
    - A couple of possessed and imps
    - One possessed engineer
      - Introduced for the first time
    - Has explosive barrels
- After the hallway
  - Encounter 6
  - Major encounter
  - Wide space

- Possessed, imps
  - A few gunners
- The player picks up a chainsaw on the way to the locked yellow door (3)
  - Encounter 7
    - Medium space
    - Major encounter
    - possessed, imps
    - A few possessed gunners
- On the way to the gore nest
  - Encounter 8
    - A couple of possessed
- At gore nest
  - Encounter 9
    - Wide space
    - A couple of possessed
- After destroying the gore nest
  - Encounter 10
    - Wide space
    - Major encounter
    - More gunners and imps
- After getting yellow key card
  - The player may find a new modifier on the path
  - Encounter 11
    - Narrow space
    - 2 possessed
    - Then 1 imp (jump scare)
- The player finds a new weapon, rifle, in the room after unlocking the yellow door
  - Safe room
    - Restore health and get armor
- After going outside
  - Encounter 12
    - Wide space
    - Major encounter
    - A few gunners
    - Imps
    - More gunners and imps
    - Then possess securities
      - Introduced for the first time
    - Has a berserk powerup
      - Introduced for the first time
- The player realigns the satellites, and has a preview of where to go

- The player backtracks. After performed some platforming, the player opens the entrance
  - Encounter 13
    - Medium space
    - A few gunners
    - A few possessed securities
- Deeper in the hallway
  - Encounter 14
    - Medium space
    - 3 imps 2 possessed
  - Encounter 15
    - 3 gunners 2 possessed 1 possessed security
  - Encounter 16
    - 4 possessed 1 shield 1 imp
- The player goes into the terminal
  - Gets the argent cell upgrade
    - Introduced for the first time
- The player goes to the end of the level and exits
- Note:
  - The encounter details may be slightly inaccurate
  - In general, the difficulty in the level gradually ramps up
    - There are three peaks in encounter
      - First
        - Encounter 6, 7
          - showcasing the power of Chainsaw
      - Second
        - Encounter 10
          - Gore nest encounter
      - Third
        - Encounter 12
          - Introduced new powerup and new enemy type
      - Between those peaks, there are padding encounters
        - Encounter 8, 9, 11
          - Only have a few possessed
  - There are two level previews
    - One after encounter 2, and one after encounter 12
      - Both involved with backtracking afterwards
        - The player could get the level map during the first backtracking
  - There are two lock and key challenges
    - The first one
      - Restore the power
        - Has a span of one counter

- The second one
  - Find the yellow key card and unlock the yellow locked door
    - Has a span of four encounters
      - Which is a ramp up in difficulty
    - There is one find-the-path challenge
      - The player needs to find the small entrance with green light behind the train rail
- Pacing Problems
  - In the find-the-path challenge
    - There are several locked doors in the room, and one entrance that is not locked
      - The player may get lost as the entrance is not locked and the right path is not so obvious
        - So, the player may spend time wondering around, and even exits the room from the entrance, which causes the player to lose the flow
  - The doors are not always locked after the player enters it, and the navigation system only shows the direction to the objective rather than the correct path, which could mislead the player
    - As a result, in a space with multiple open doors, the player may get lost. E.g., the hub area



Figure 107: Door with Green Lights. [2]

- There is a potential pacing problem when the player has trouble finding the yellow key card
- After entering VEGA terminal, both the visual and the audio remain quite ominous, and the encounters before reaching the terminal are not so difficult, suggesting harder encounters after the voice communication. However, after the player leaves the terminal, the objective leads the player to exit the level, which seems like a redundant step, and disappoints the player who thought there would be harder encounters before the level ends



Figure 107: Ominous Environment. [2]

## Conveyance

- At the level start
  - the broken wire sparks drawing player's attention with both motion and lights
  - the door opens, which is a motion and forms an open attraction and a good frame
  - light drops in the middle and forms a contrast between light and dark

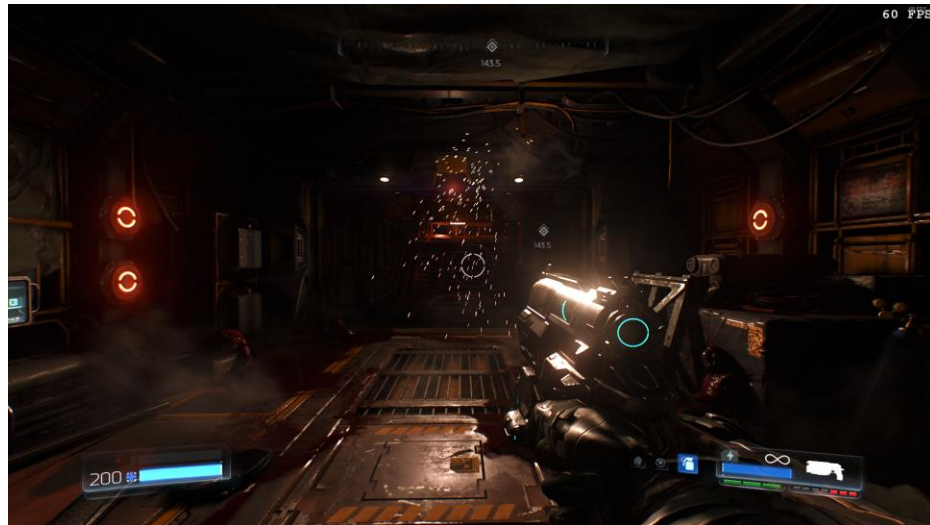


Figure 108: Level Start. [2]

- At the hallway
  - Red dark ominous atmosphere forms and the possessed scream
    - Suggesting incoming danger

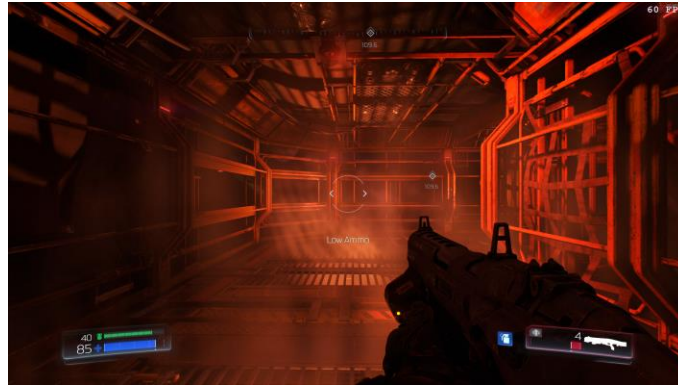


Figure 109: Hallway. [2]

- Red dark ominous atmosphere forms and the possessed scream
  - Suggesting incoming danger
- At the hub area, the player can hear possessed scream from below, so the player knows that there are threats needed to be eliminated below
  - In another word, the possessed scream is similar to audio breadcrumbs
- At the power restore room and satellite room
  - Gives the player a preview of later section in the level
    - Tells the player where to go



Figure 110: Preview. [2]

- In front of the broken door
  - The light draws player's attention



- The orange/yellow are lines pointing out the door
- The broken door is broken is a consistent way so that the player knows it can be opened by pressing [E]



Figure 111: Broken Door. [2]

- At locked yellow door
  - Use yellow to draw player's attention
  - Use audio and sign to show the player the door needs a key card to activate
  - A possessed projection will show up hinting the player where to find the key card



Figure 112: Locked Yellow Door. [2]



Figure 113: Projection. [2]

- At the small entrance
  - The train's motion and the green light draws player's attention



Figure 114: Motion. [2]

- Gore nest
  - Is red and glowing drawing player's attention
- The health replenisher is blue and has a health sign, which is consistent with the rest of the game



Figure 115: Health Replenisher. [2]

- Going outside
  - Warm color contrast with dark color
  - Light draws attention
  - Door is an open attraction and forms a frame



Figure 116: Door to the Outside. [2]

- The powerup emits light and flame motion drawing player's attention



Figure 117: Berserk. [2]

- The green lights on platforms show the player where to go next



Figure 118: Green Lights. [2]

- The red lights and ominous atmosphere suggest incoming danger in the level when there is none and the level ends after walking out of the terminal and enters another room (see section above for more details)



Figure 119: End of Level. [2]

- Bad conveyance
  - Entered door is not locked and still shows green light
    - Which could let the player mistaken as next entrance



Figure 120: Lost in.Level. [2]

- There is no guidance to tell how to crouch enter a small entrance
  - The projection only shows up once and moves quite fast
  - Could be a UI pop up to show the player which button to press when need to crouch for the first time

- The corpse is not obvious, and the pickup UI text is too small and does not contrast well with the white background

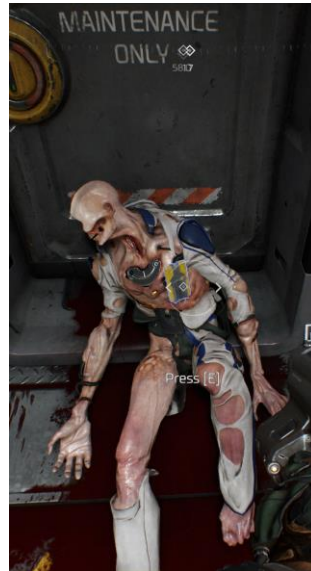


Figure 121: Corpse with Key Card. [2]

## Level Design Techniques

- Summary of techniques mentioned in previous sections
  - Pacing
    - Difficulty in the level gradually ramps up
      - But there are ups and downs in between
        - After difficulty peaks, there are easy encounters to give player room to breathe
    - Introduced new mechanic one at a time, and let the player to practice the new mechanics in the next encounter
      - E.g., after getting chainsaw, the next encounter, which is similar to the previous one but more enemies, is harder and have less pace, which encourages the player to use chainsaw, a melee weapon, so that the player can experience the power of the new weapon
    - Give player a preview of future sections so player knows where to go
  - Conveyance
    - Use motion and light to draw player's attention
    - Use door as an open attraction and a good frame
    - Use light forms a contrast between light and dark to draw player's attention
    - Use audio or sign to lead the player where to go
    - Use color and light to suggest incoming danger
    - Use lines to form frames and leads to goal
    - Game objects have a consistent form so that the player knows how to interact with it

- Use gates and valves to prevent the player from going in an unwanted path
- Use enemies as breadcrumbs

## What did they do well?

- All the level design techniques discussed in previous sections
  - Using a lot of level design techniques to guide the player without breaking player's immersion

## Potential Improvements

- Problems are already discussed in previous sections their summary and solutions are listed below
  - Sometimes, there are more than one door with green lights
    - The player may get lost and go back to the entrance the player just entered, which causes the player to lose flow
    - Solution: create more gates & valves to prevent the player from derailing
  - The navigation system only shows the direction to the objective rather than the correct path, which could mislead the player
    - Solution: shows height on the navigation systems
  - There is no guidance to tell how to crouch enter a small entrance; the projection only shows up once and moves quite fast
    - Solution: shows tutorial UI to the player which button to press when need to crouch for the first time; allows the player to press the button repeatedly and let the projection shows up again from the beginning
  - The UI text for interactable object is really small, the player may miss it by accident, and the lying corpse is not special in the game, which could be missed as well. As a result, the player may trouble finding the yellow key card, even if the player sees the corpse
    - Solution: make the corpse more special visually; increase the font size and boldens the UI
  - After entering VEGA terminal, both the visual and the audio remain quite ominous, and the encounters before reaching the terminal are not so difficult, suggesting harder encounters after the voice communication. However, after the player leaves the terminal, the objective leads the player to exit the level, which seems like a redundant step, and disappoints the player who thought there would be harder encounters before the level ends
    - Solution: add an additional hard encounter after the voice communication or remove the extra walk to exit the level

## References

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