WARFRAME

Space Ninjas with Machineguns!

Daniel Brewer Digital Extremes



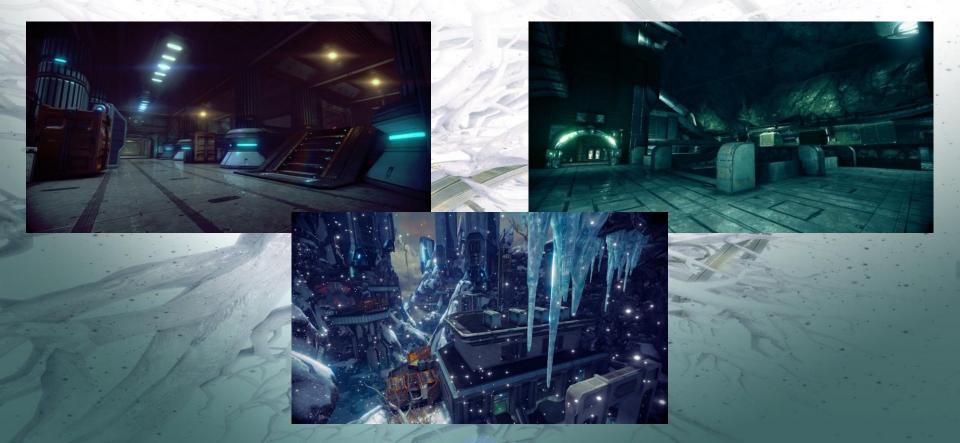
www.warframe.com

What is Warframe?

- Fast, action-packed, multiplayer, co-op, 3rd person shooter
- Multiple enemy factions
- Procedural Levels for repeat mission play-throughs
- Players level up their gear and abilities
- Free-to-play allows us to improve and add features and support the community

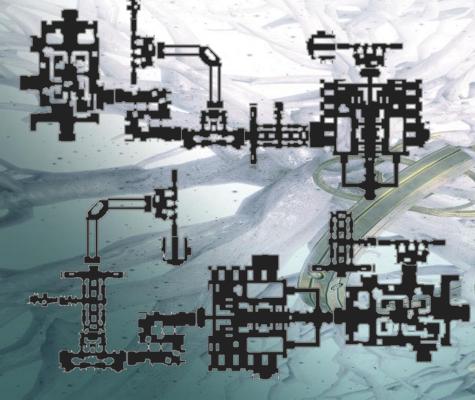


Environments



Procedural Levels

Procedural Problems



- The blocks can be rotated and linked together in any order
- We don't know ahead of time which route through each block the players need to take
 - The same block can appear multiple times in the layout
- We can't rely on the usual triggered spawns and scripted encounters

Tac Area Map







Tac Area Map Creation





Distance From Nav Edges Find Ridges Consolidate Areas and Corridors



Tac Area Map Creation





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Tac Area Map Creation

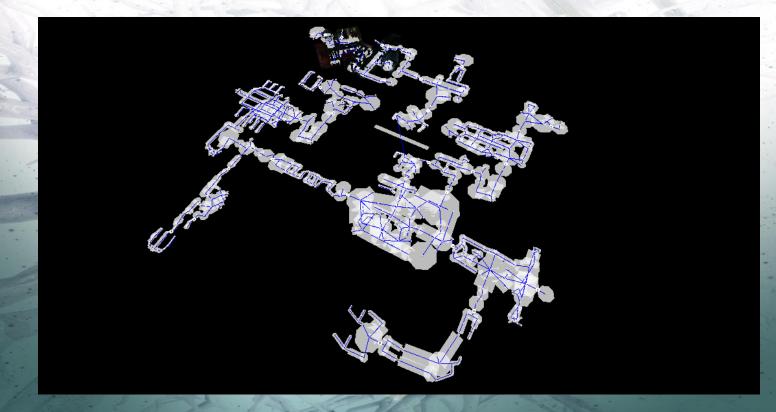




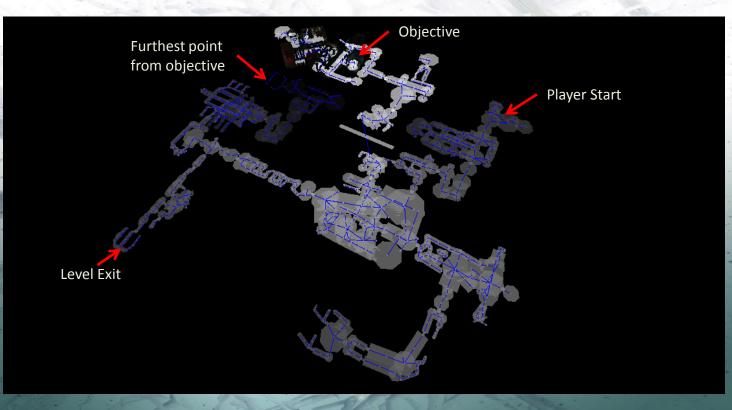
Distance From Nav Edges Find Ridges Consolidate Areas and Corridors



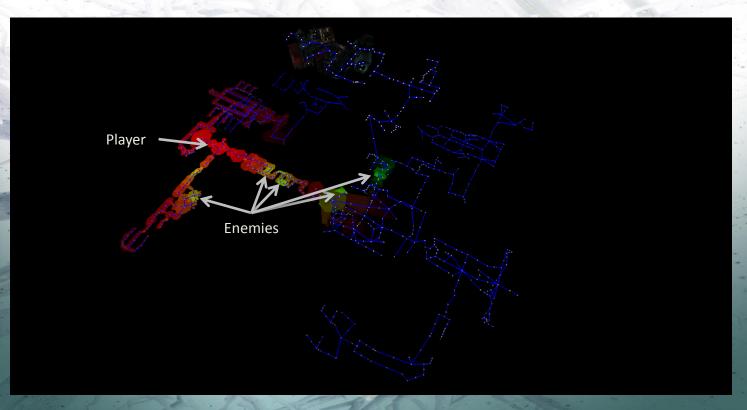
Runtime Tac Area Map



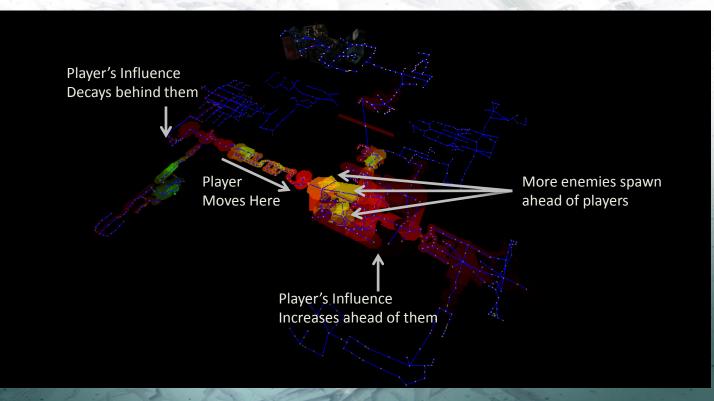
Distance Map



Influence Map



Influence Map



Active Area Set



Active Area Set

Active Areas Decay behind players and will eventually deactivate

These areas have deactivated and any agents here are paused

Players Moves Here

Areas become active ahead players

Pacing Roller Coaster

И

Small, intro encounters

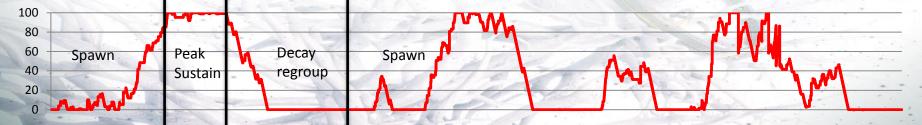
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Large, intense encounter

Mop-up and quiet time

New encounters start ramping up again

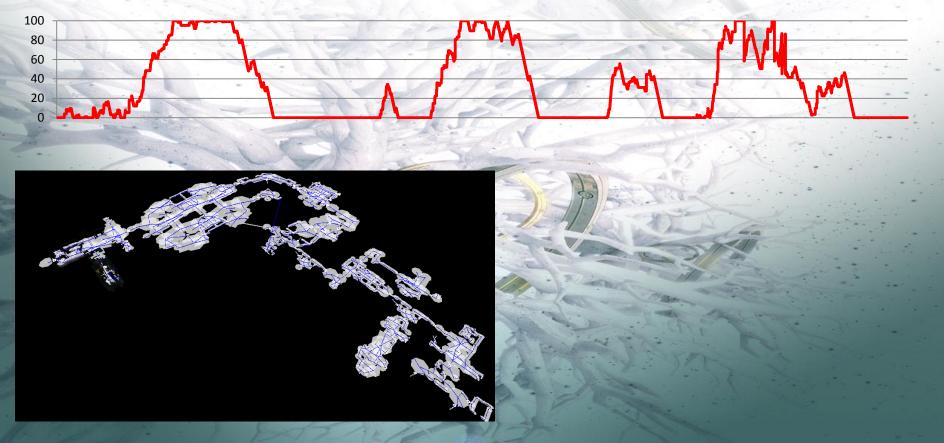
Player Intensity

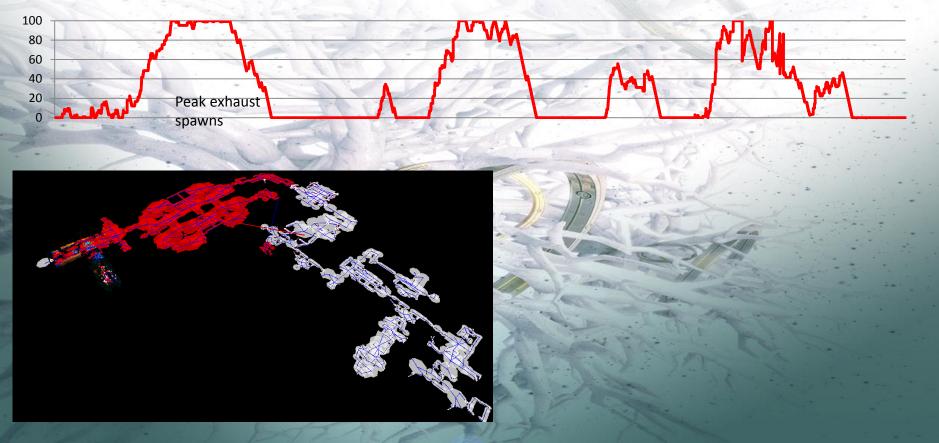


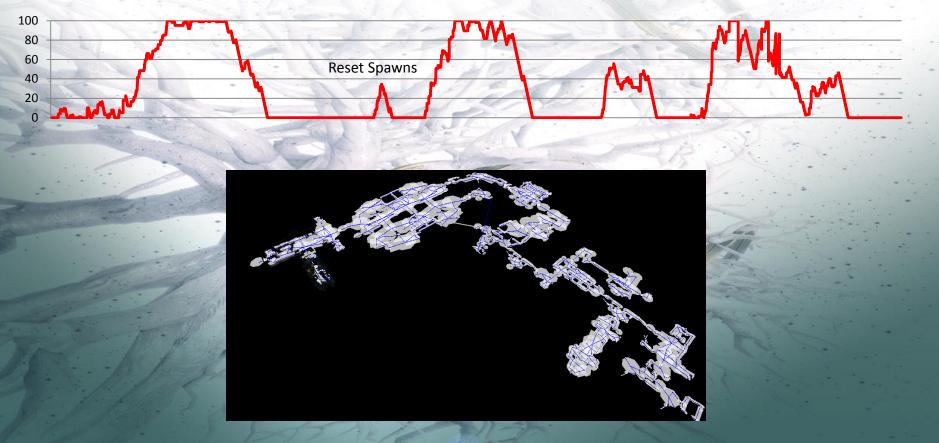


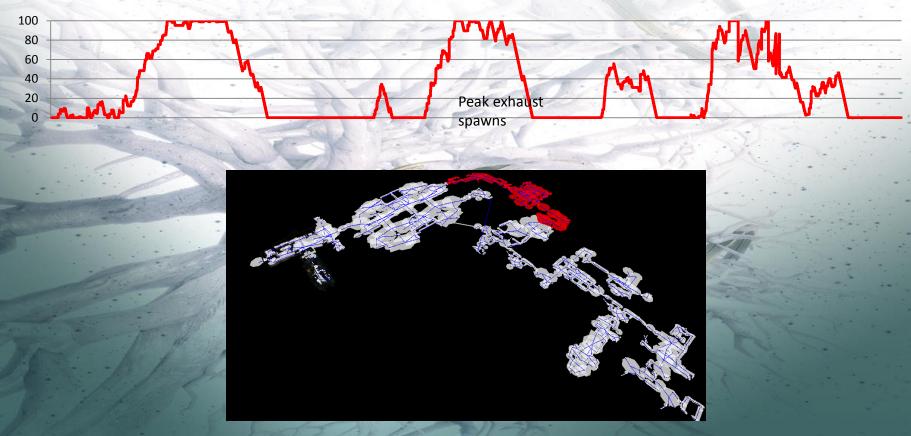
Normalized damage to player
Number of enemies killed nearby

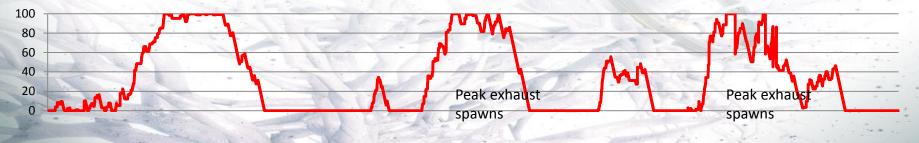
 Scales as player power level increases

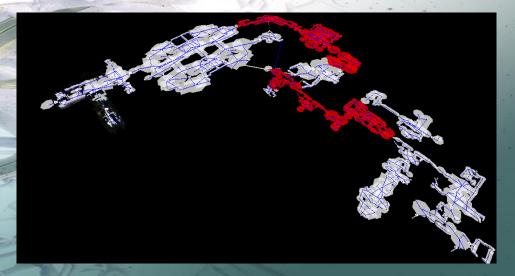












Exterminate Missions

- Linear Gauntlet of enemies
- Must kill a predetermined number of enemies
- The required number of enemies must spawn before the players reach the exit
- For better pacing, we don't want a linear distribution of enemies through the level

Population Graph

Percentage of population required

Normalized distance through level

Ninjas play free at www.warframe.com

Daniel Brewer daniel.brewer@digitalextremes.com

EXTREMES

GBC AIGAME BROGRAMMERS GUILD