



# Mass Effect Andromeda Audio Retrospective

Michael Kent  
Creative Audio Director Bioware

Who am I?





## Michael Kent – Creative Audio Director - Bioware

- 14 years of experience making games



- 20 years of audio experience
- 3 weeks of Power Point experience



# The Team

- The team was made up of 14 audio designers and 1 audio programmer





**Michael Kent**  
Audio Direction



**Team Members**



Production Support

**Byron Proulx**



## Mass Effect Andromeda Statistics

- 23,200 raw sound assets in the game
- 23,300 patches/patch configurations/mixers
- 31 levels varying in size and complexity
- 69,250 lines of dialogue
- 1,300 characters
- 500 dialogue sessions
- 543 minutes of music





**How do we handle games this size?**

**Where do we start?**





**Hash out an audio vision for the game**

**Break down what we want to fix from the last game and what we want to add to the new experience**





## Goals

- Respect the Mass Effect vision – update it to 2017
- Grounded sonic experience
- Full sharpened mix

## Avoid

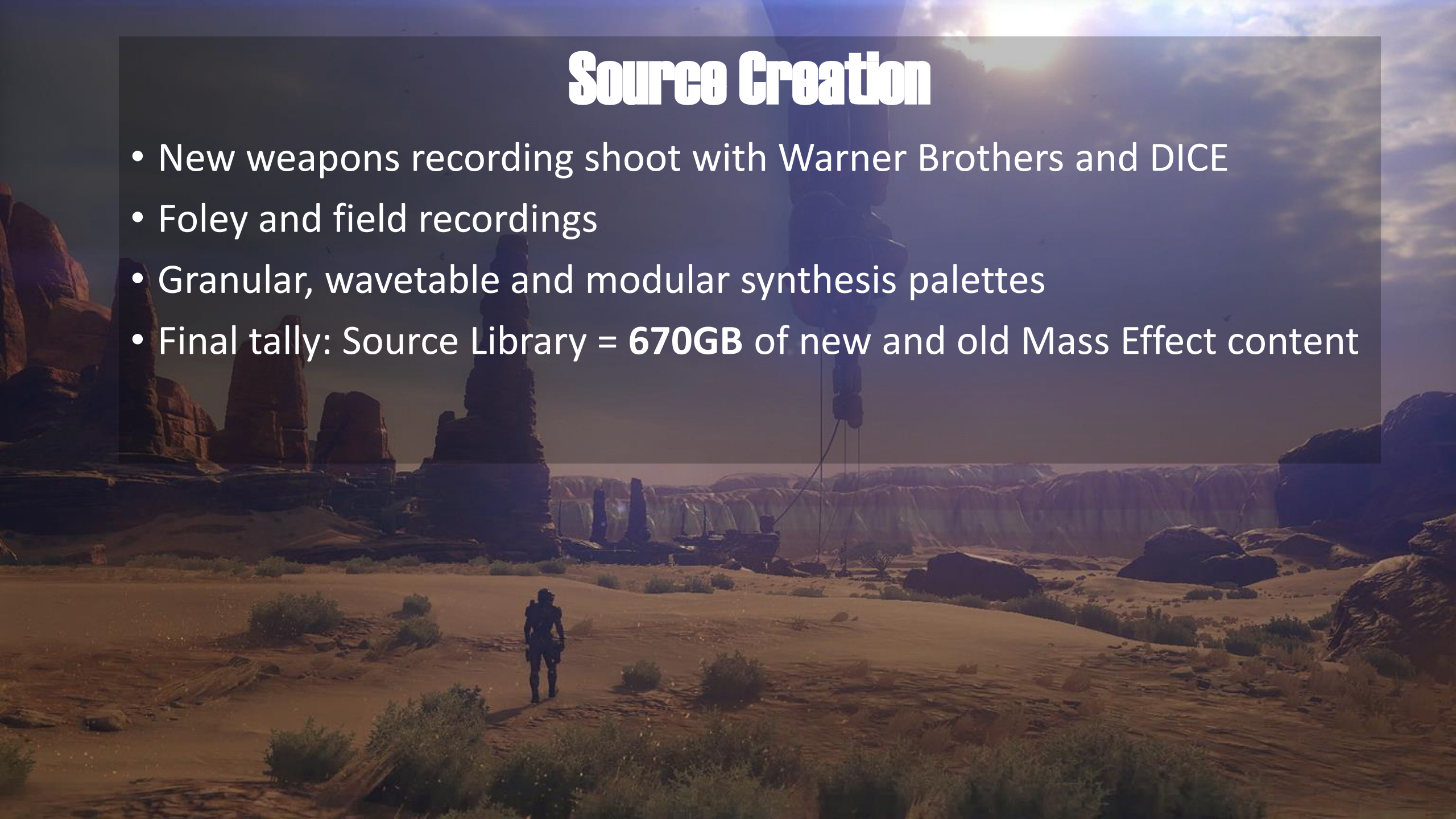
- Distracting or noisy mix
- Unfocused sound design
- Static frequencies/ear fatigue





# Source Creation

- New weapons recording shoot with Warner Brothers and DICE
- Foley and field recordings
- Granular, wavetable and modular synthesis palettes
- Final tally: Source Library = **670GB** of new and old Mass Effect content





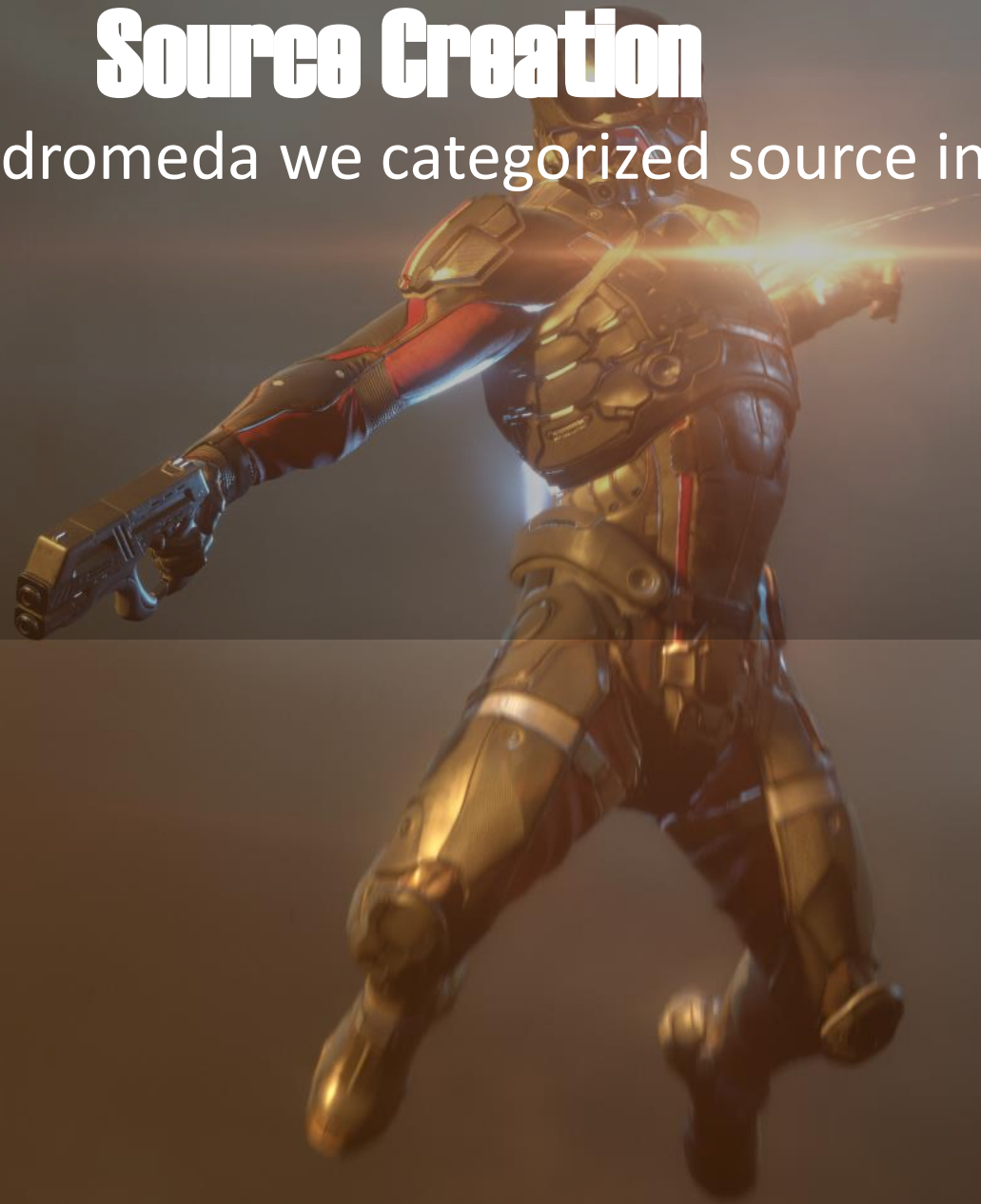




# Source Creation

For Mass Effect Andromeda we categorized source into 4 groups:

- Milky Way
- Kett
- Remnant
- Angaran





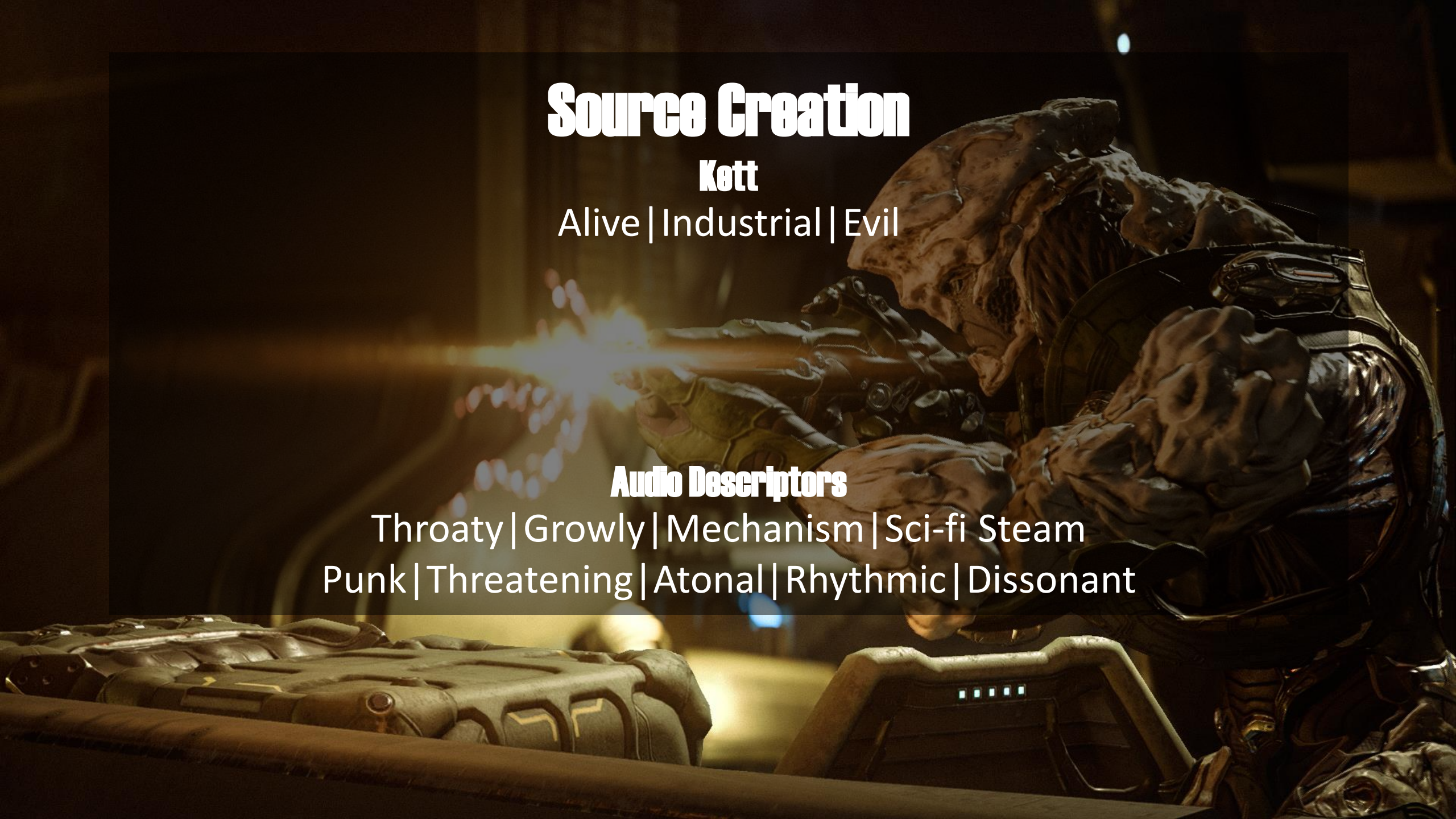
# Source Creation

**Kett**

Alive | Industrial | Evil

## Audio Descriptors

Throaty | Growly | Mechanism | Sci-fi Steam  
Punk | Threatening | Atonal | Rhythmic | Dissonant





# Source Creation

Remnant

Creepy | Mysterious | Foreign

Audio Descriptors

Robots | Creepy | Digital | Electro Static | Alive | Mysterious | Angular







# Source Creation

Angaran

Clean | Natural | Analog

## Audio Descriptors

Soft | Harmonious | Wild | Accessible | BioElectric







A futuristic soldier in a desert landscape. The soldier is on the left, wearing a brown and grey tactical suit with a helmet. He is holding a glowing purple and orange energy weapon. In the background, there is a city with tall, dark, rectangular buildings. A large, rocky, purple and black creature is on the right, also holding a glowing purple energy weapon. The ground is sandy and rocky. The sky is blue with some clouds. The text "Weapons and Combat" is centered in the middle of the image.

# Weapons and Combat





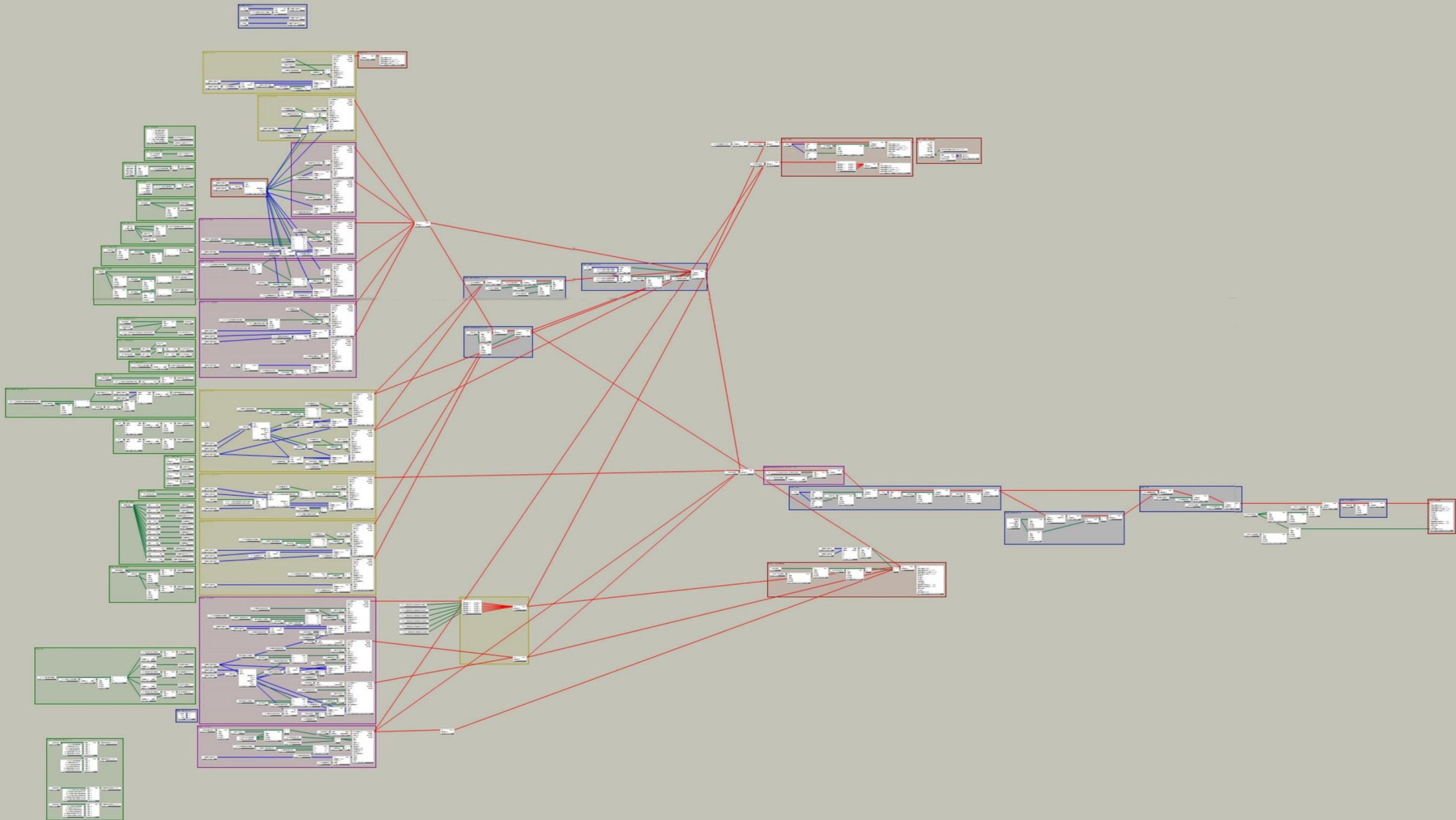


# Weapons and Combat

- Hybrid approach to weapons design
- Combination of sci-fi and ballistic weapons = grounded gameplay experience
- Aggressive mix in combat —player-centred audio mix



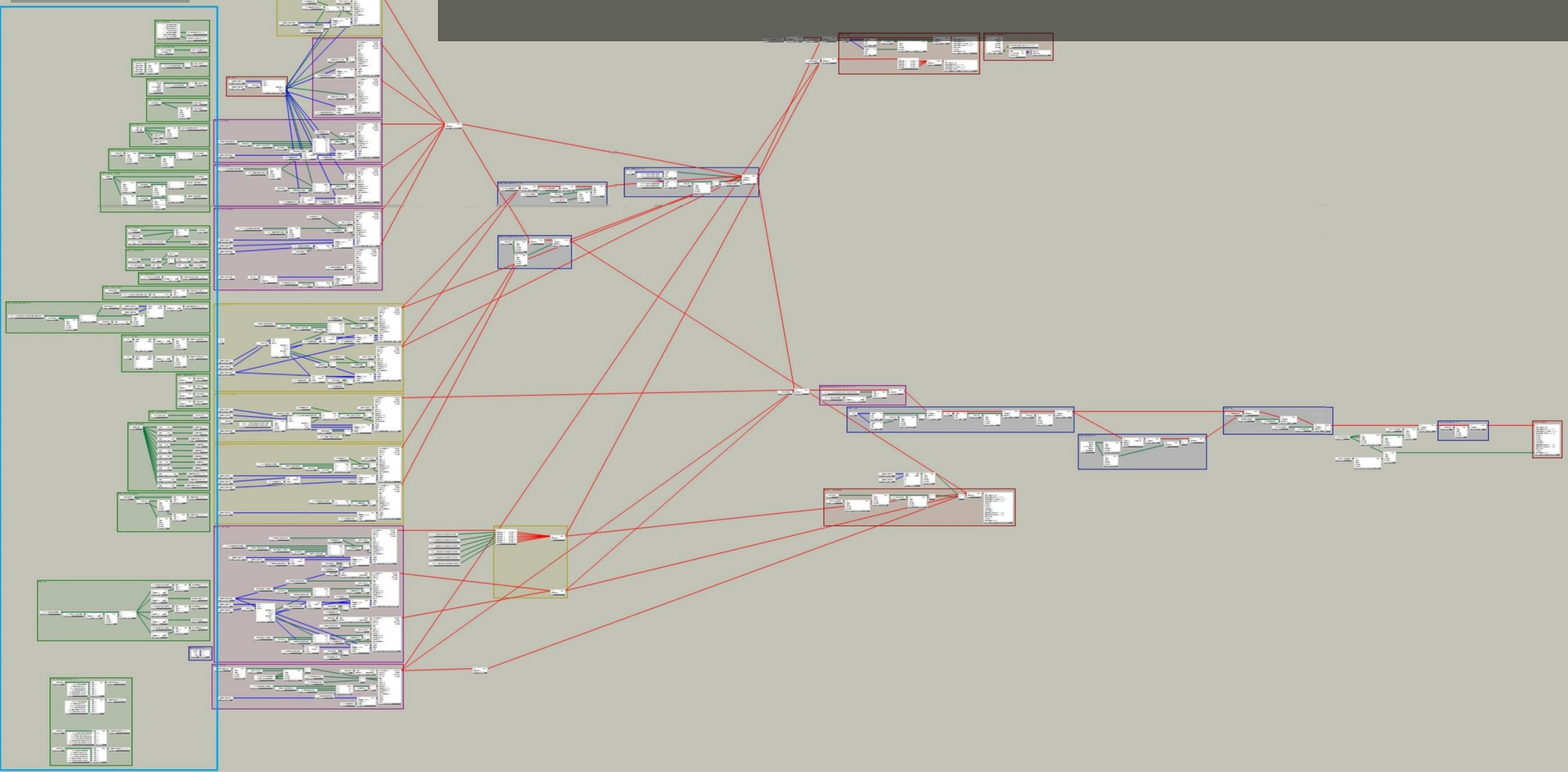






Logic

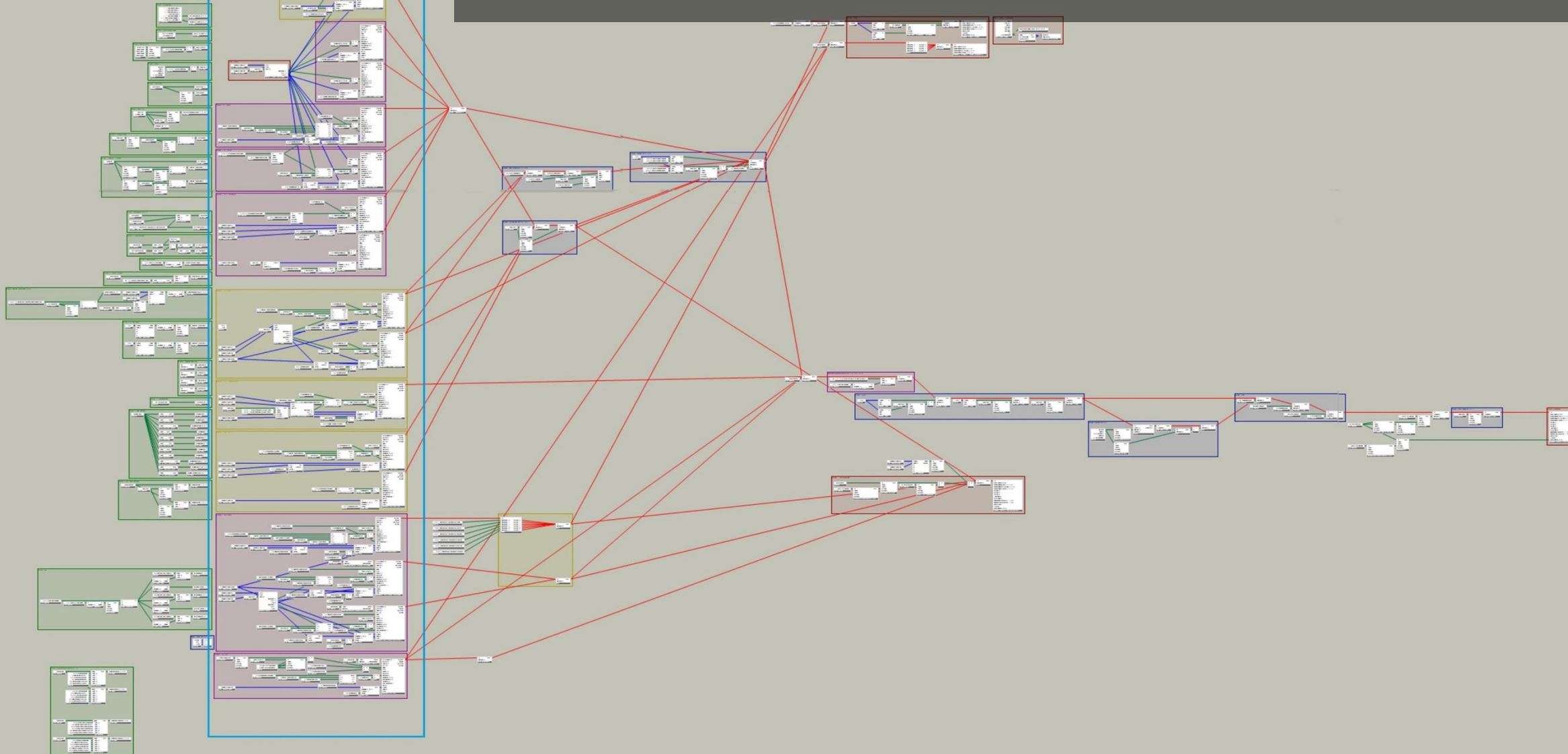
Parameter and event inputs from our weapons and combat systems live here.



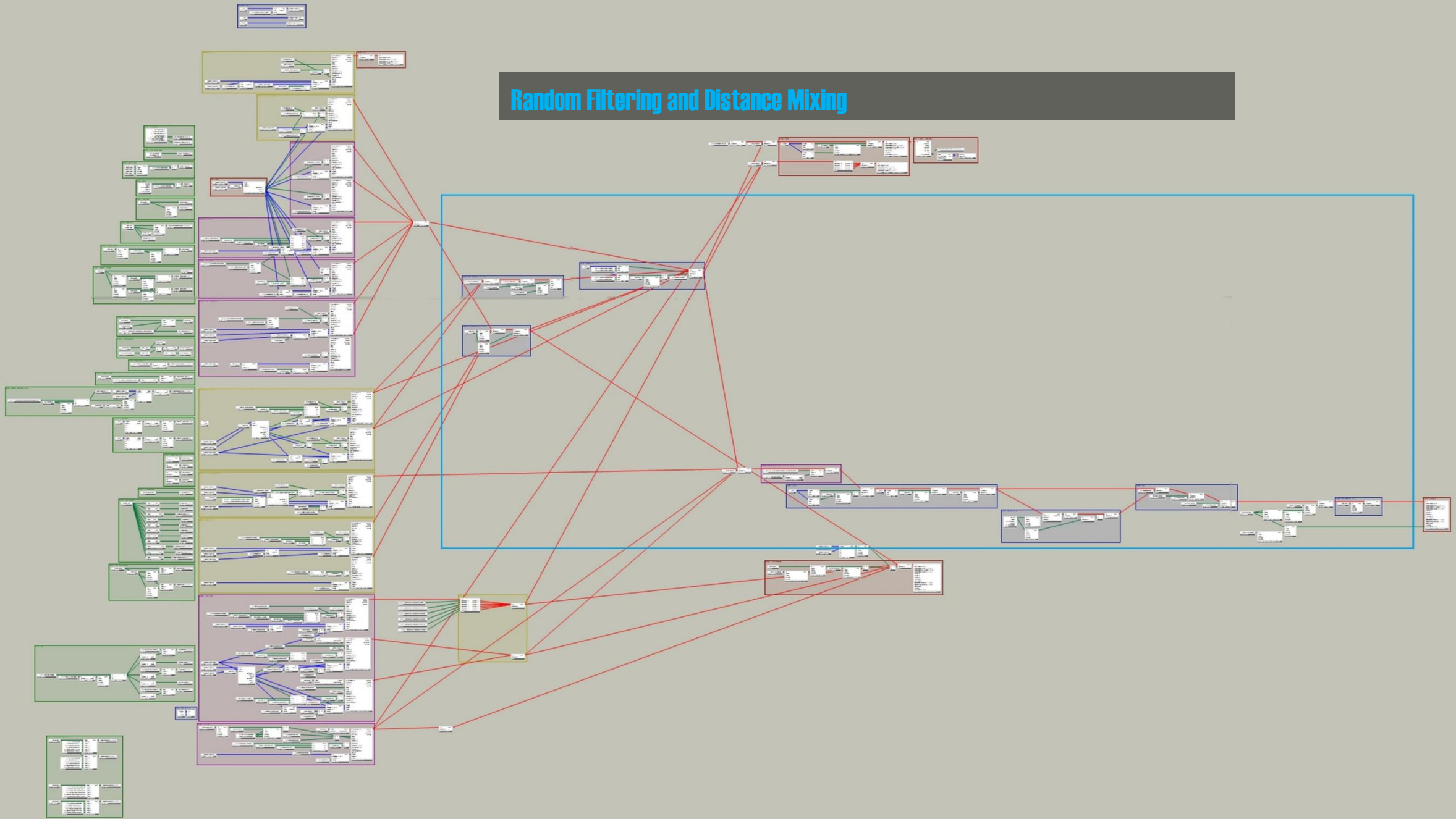


## Samplers

Events and parameters feed into the samplers and control what is playing.



# Random Filtering and Distance Mixing



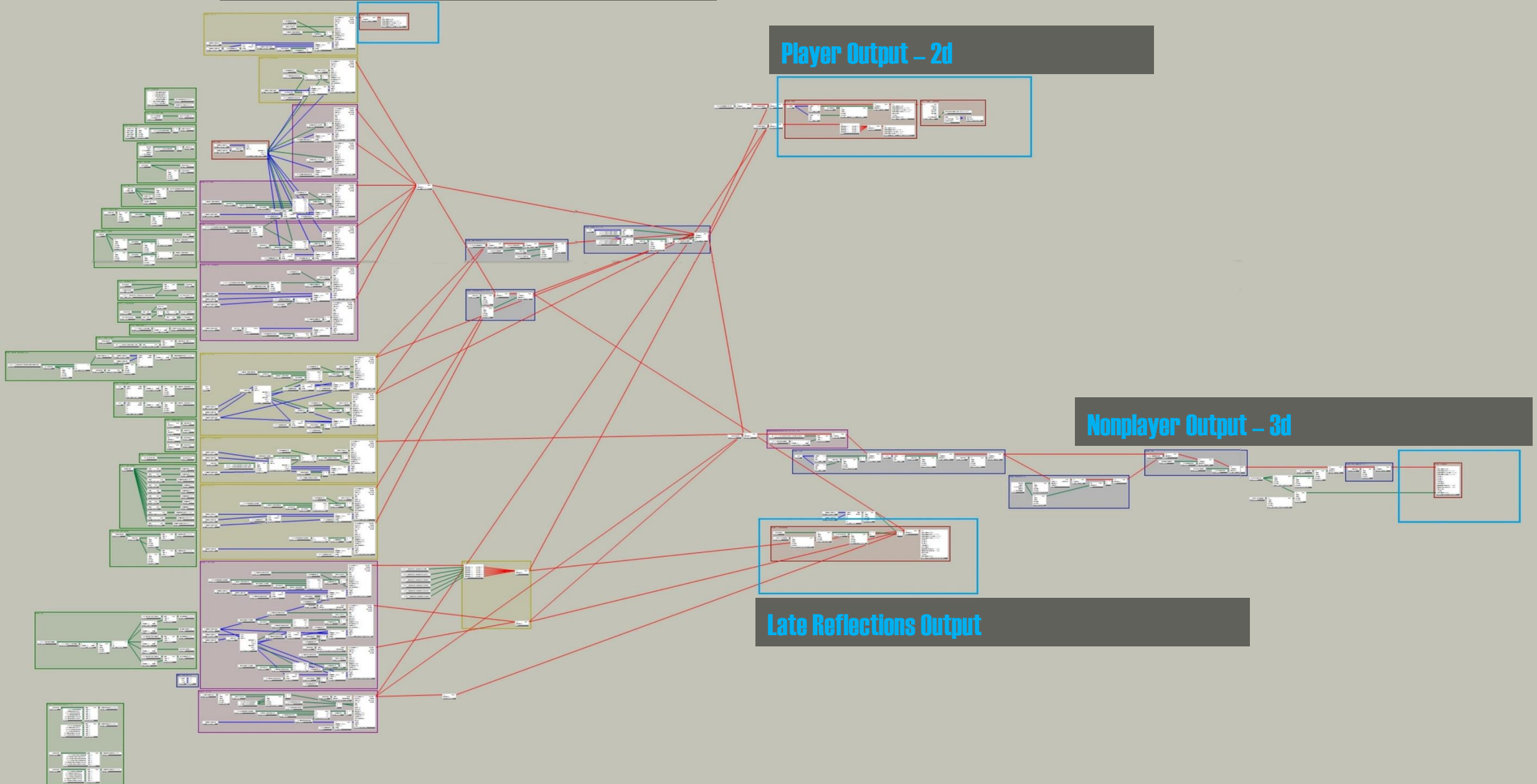


## LFE Output – player only

## Player Output – 2d

## Nonplayer Output – 3d

## Late Reflections Output





# Weapons and Combat Systems

- Area Type Switching – indoor/outdoor



**Field**



**Forest**



**Canyon**



**Urban**



**Int Large**

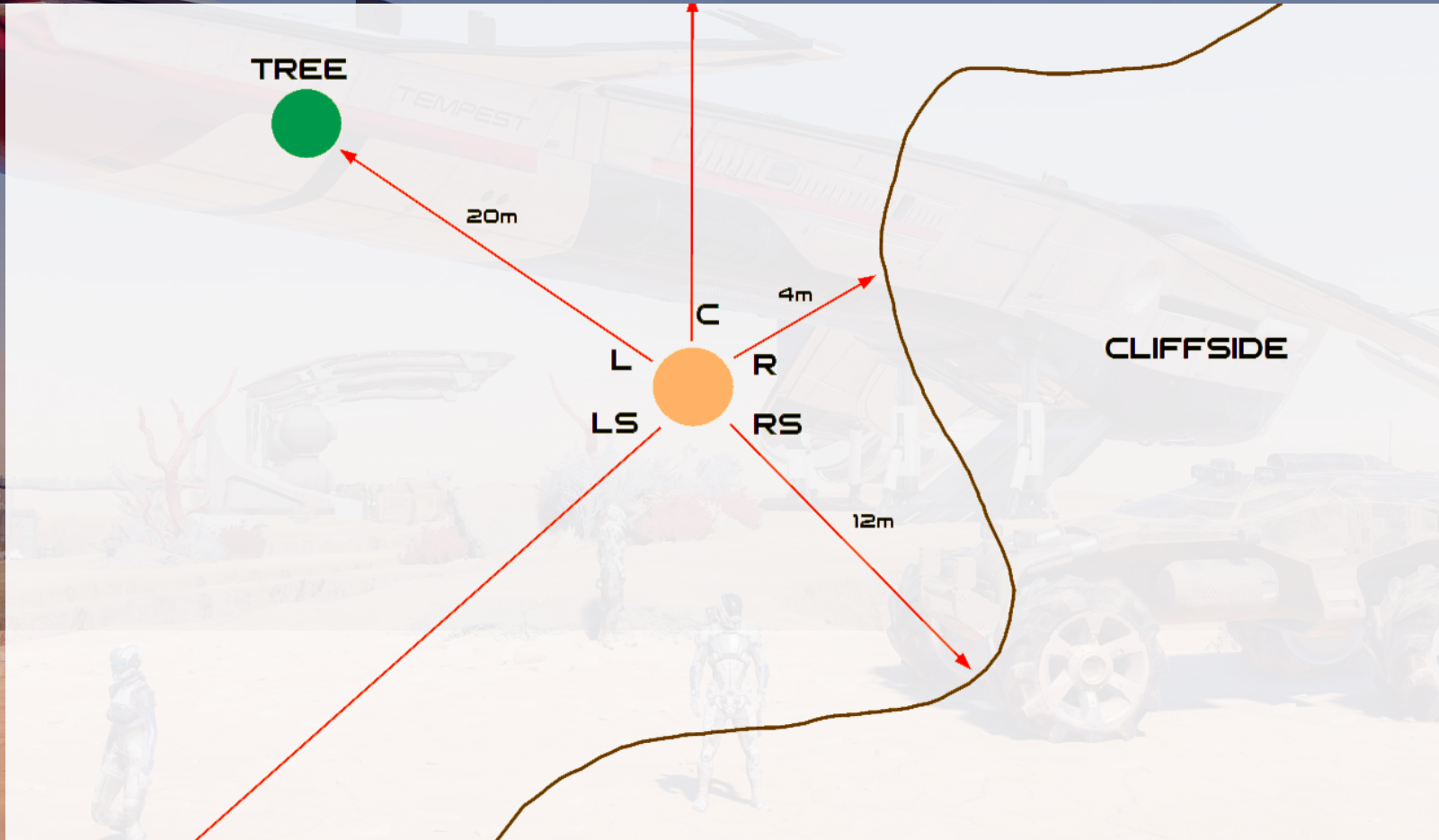


**Int Small**



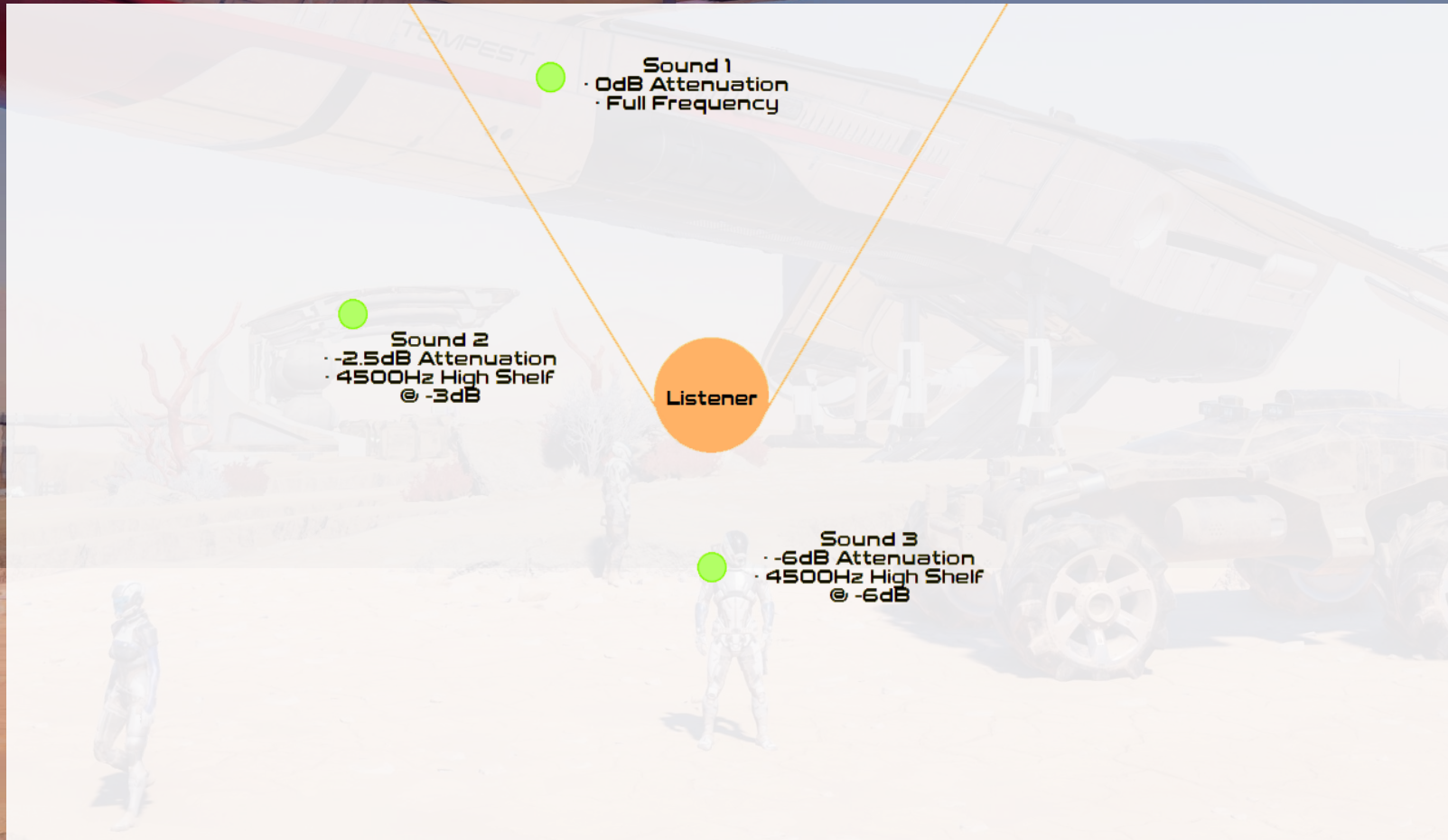
# Weapons and Combat Systems

- Area Type Switching – indoor/outdoor
- Early and Late Reflections – grounded in environment



# Weapons and Combat Systems

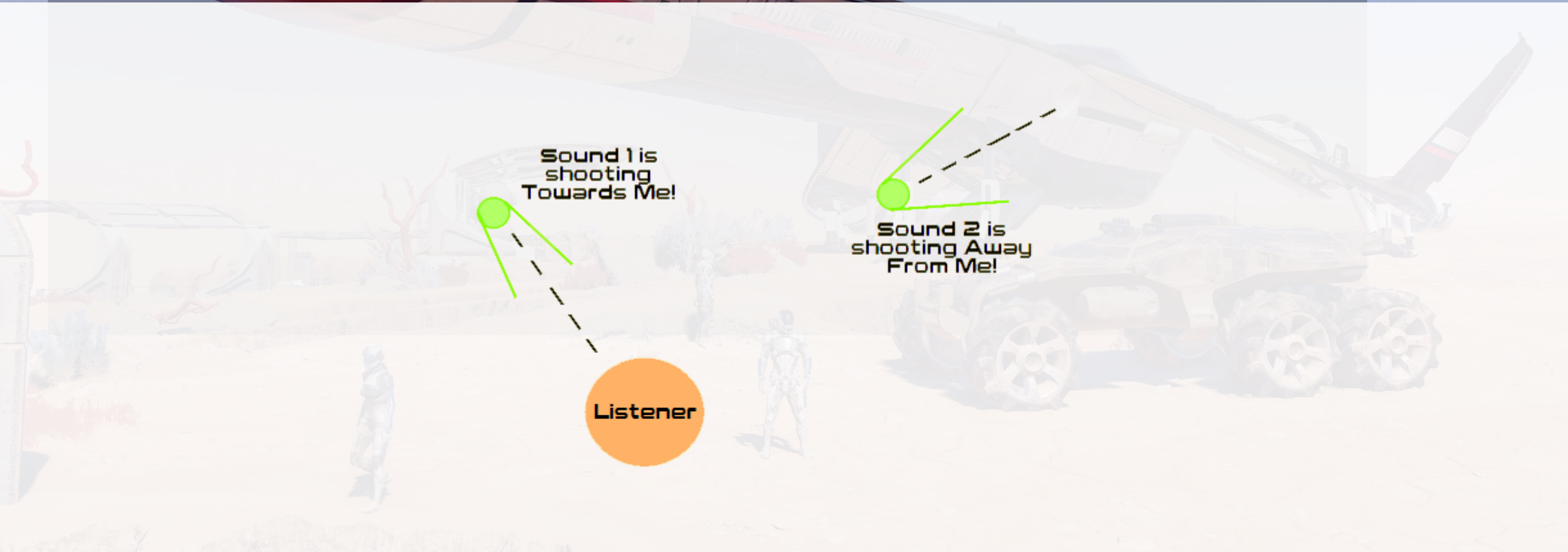
- Area Type Switching – indoor/outdoor
- Early and Late Reflections – grounded in environment
- Relative Orientation – FOV mixing





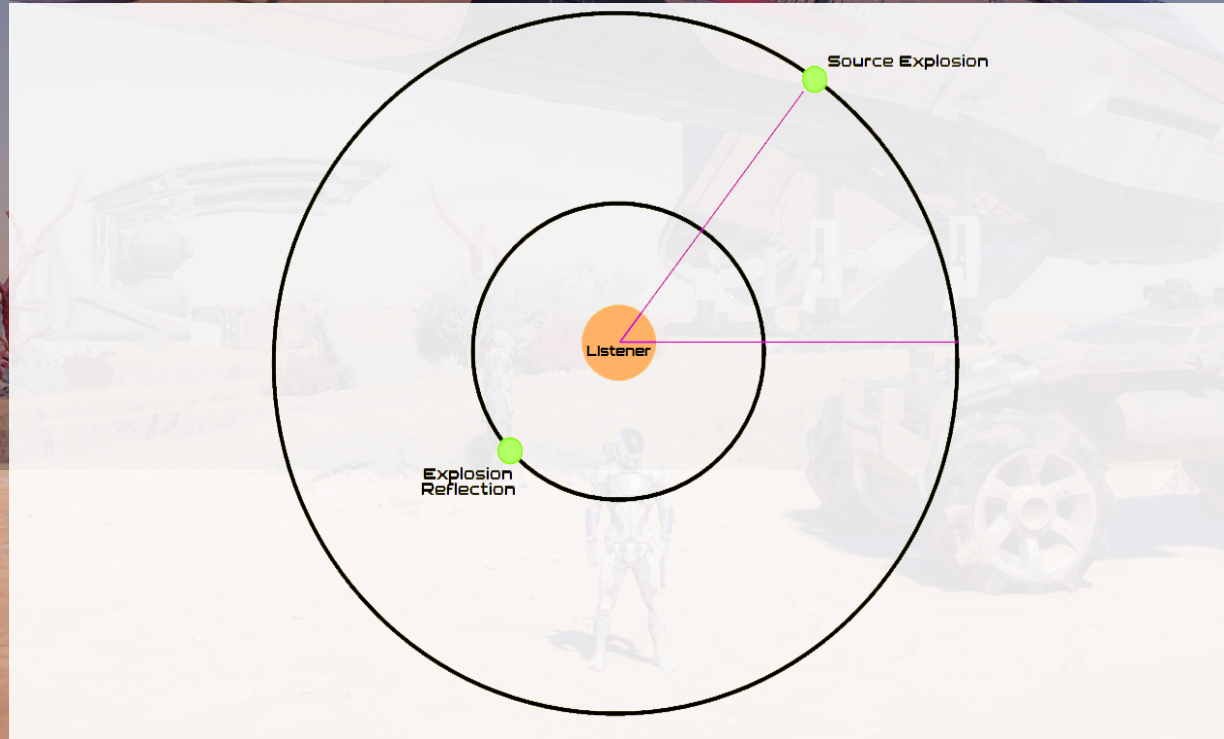
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- Area Type Switching – indoor/outdoor
- Early and Late Reflections – grounded in environment
- Relative Orientation – FOV mixing
- Directional Mixing – “Towardsness”



# Weapons and Combat Systems

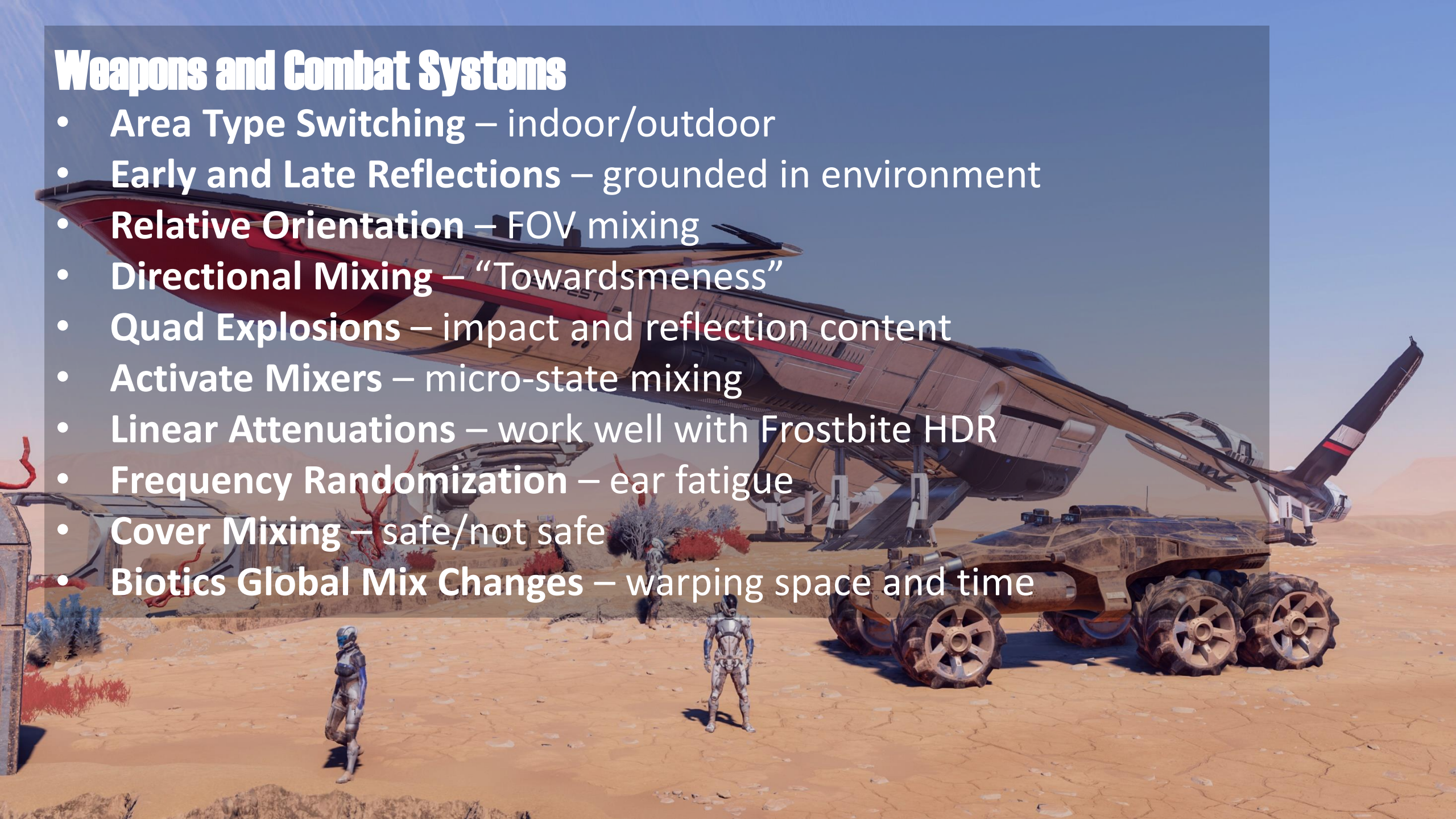
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- Directional Mixing – “Towardsness”
- Quad Explosions – impact and reflection content





# Weapons and Combat Systems

- Area Type Switching – indoor/outdoor
- Early and Late Reflections – grounded in environment
- Relative Orientation – FOV mixing
- Directional Mixing – “Towardsness”
- Quad Explosions – impact and reflection content
- Activate Mixers – micro-state mixing
- Linear Attenuations – work well with Frostbite HDR
- Frequency Randomization – ear fatigue
- Cover Mixing – safe/not safe
- Biotics Global Mix Changes – warping space and time







# Procedural Foley and Breathing

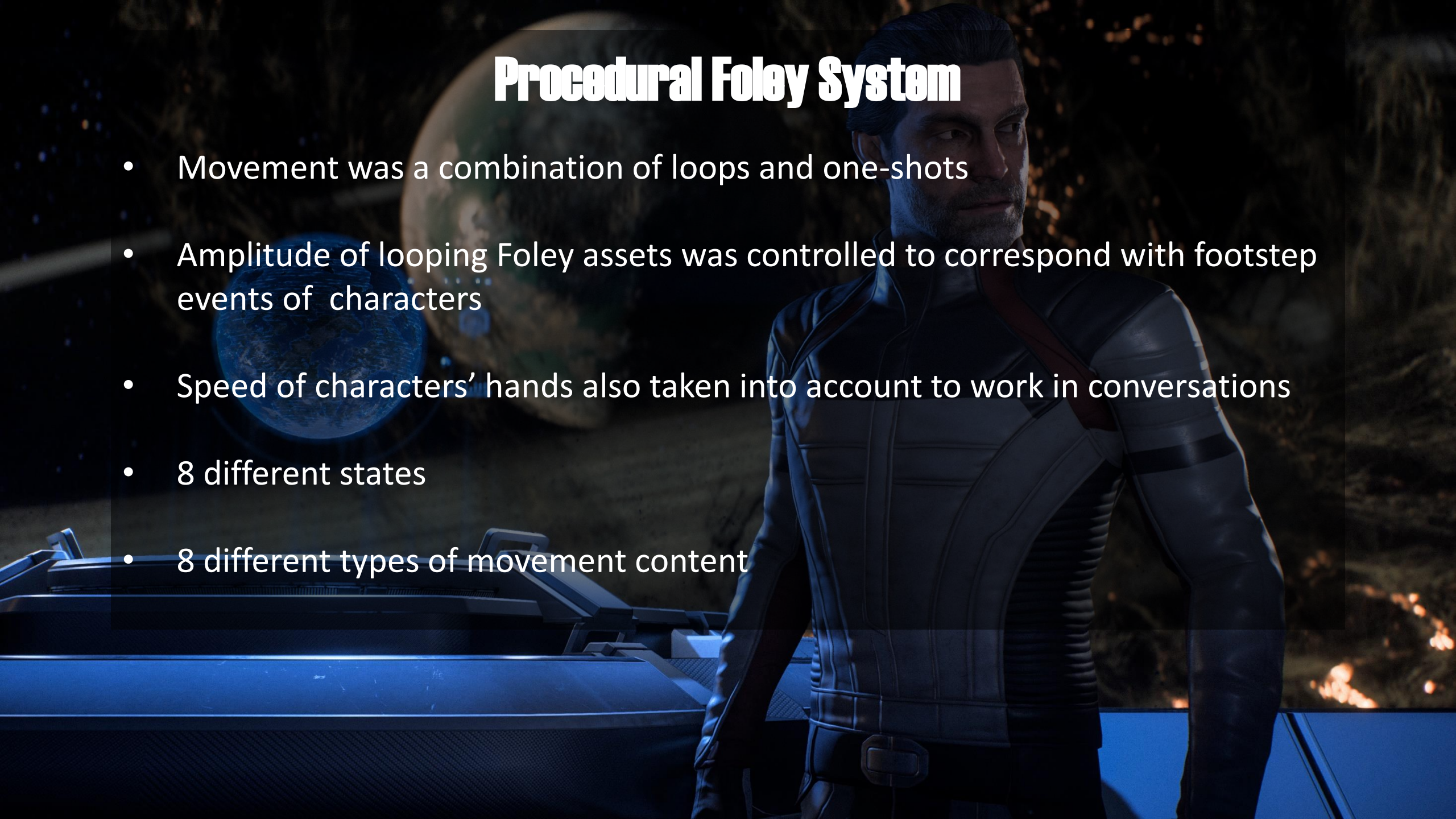
- Built procedural Foley system that got us 80% coverage on movement sounds in our game
- Created dynamic breathing system - responsive to player activity





# Procedural Foley System

- Movement was a combination of loops and one-shots
- Amplitude of looping Foley assets was controlled to correspond with footstep events of characters
- Speed of characters' hands also taken into account to work in conversations
- 8 different states
- 8 different types of movement content





# Breathing System

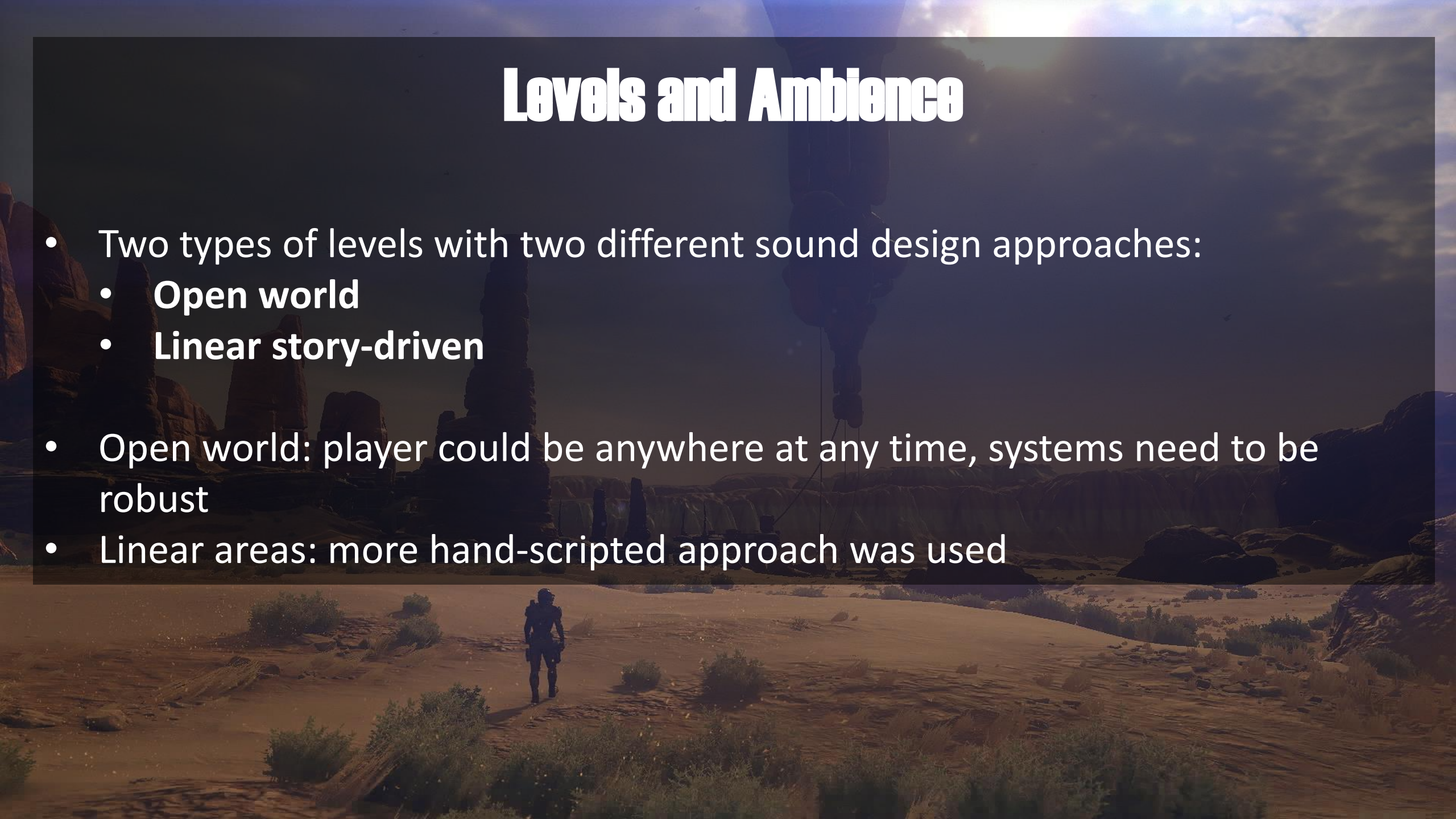
- Combat breathing animations were controlled by audio breathing system
- 3 states: low exertion to high exertion
- Generated level of exertion by calculating how fast the character was going and how much they have exerted
- Hot, cold and poison hazards
- The Breathing system and exertion system worked together.





# Levels and Ambience

- Two types of levels with two different sound design approaches:
  - **Open world**
  - **Linear story-driven**
- Open world: player could be anywhere at any time, systems need to be robust
- Linear areas: more hand-scripted approach was used



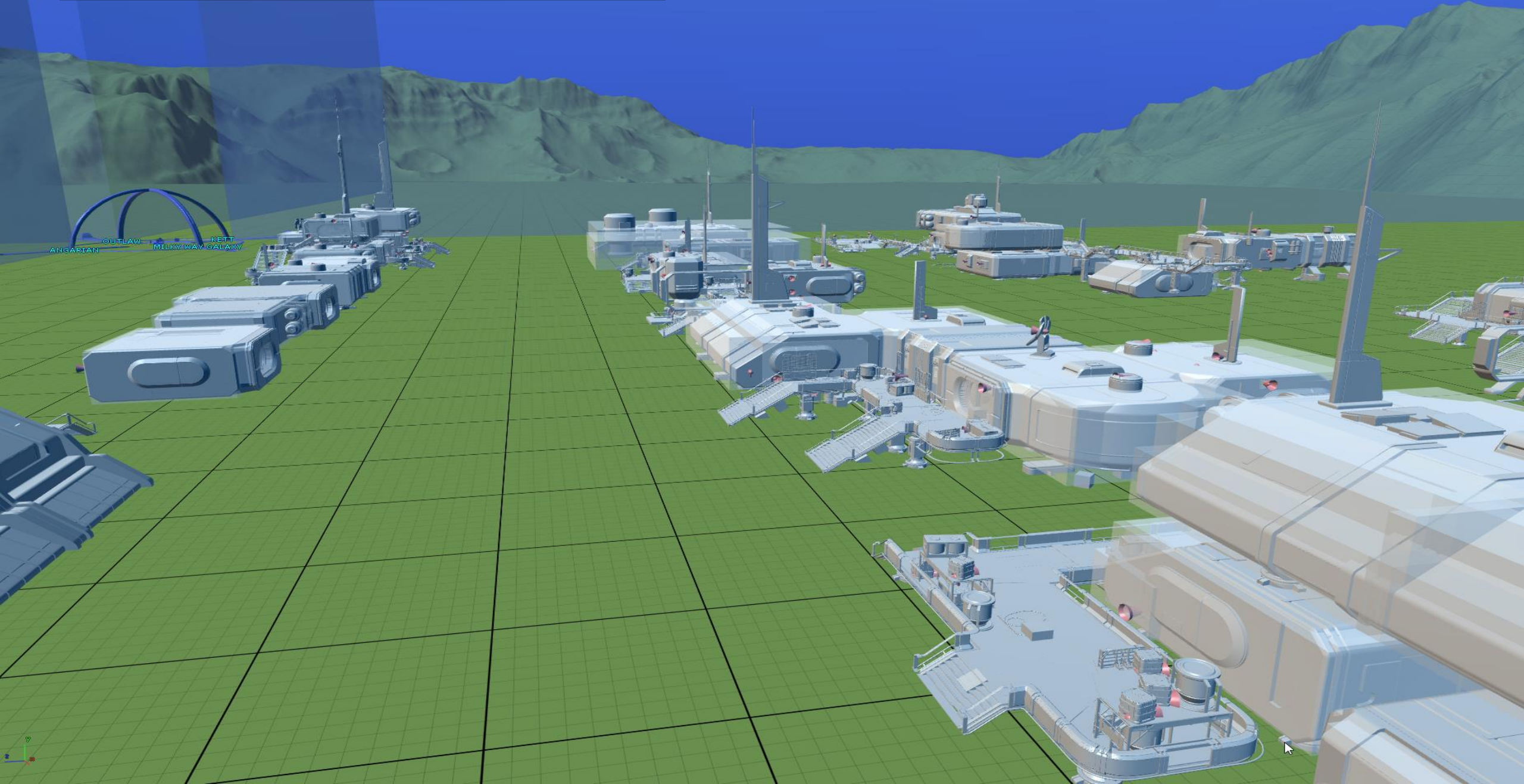
# Levels and Ambience

- Quad ambiances for the base
- Overlays
- Big Worlds
- Procedural locators





# Test Level for Ambient Systems

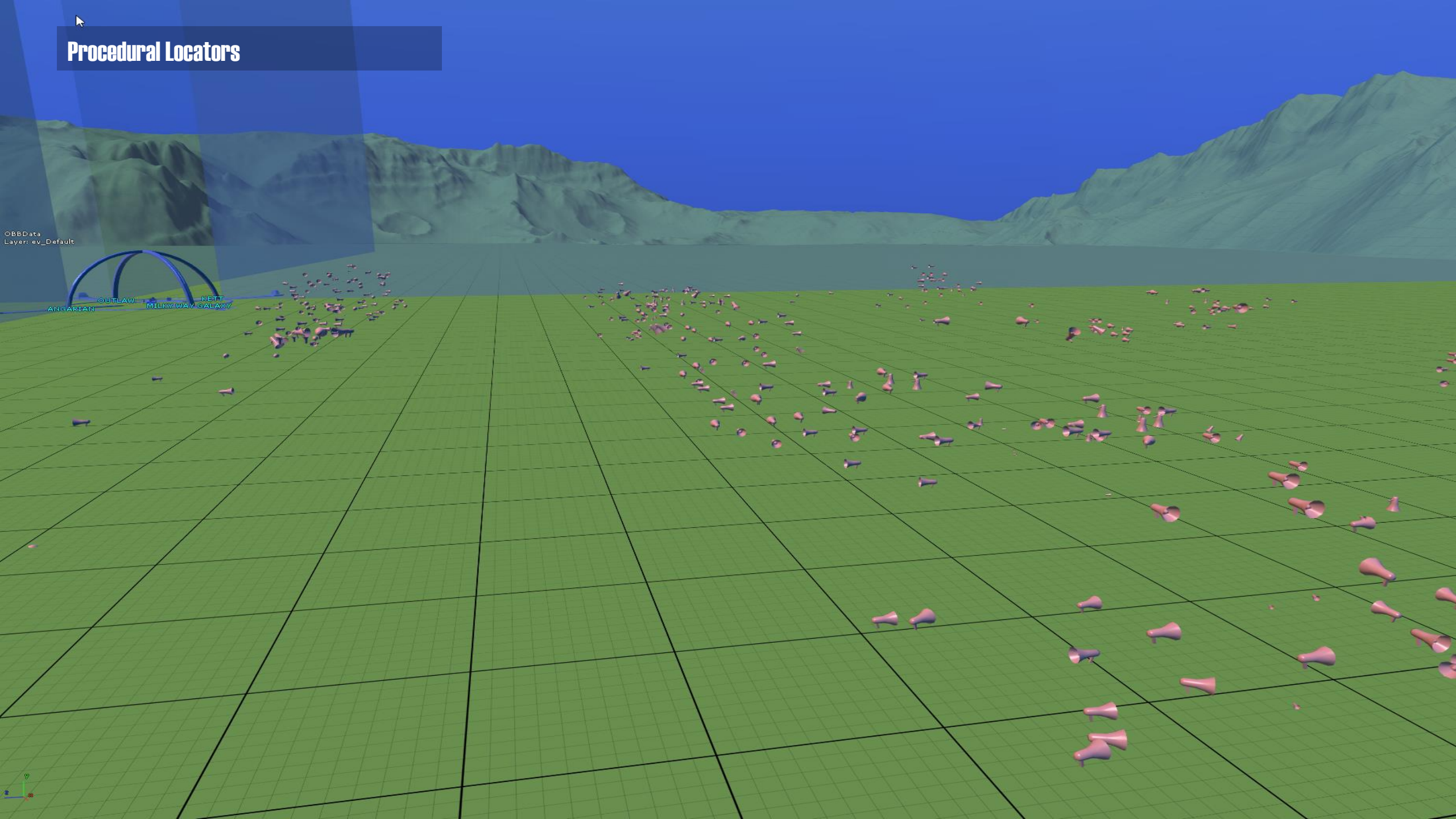




# Procedural Locators

OBBData  
Layer: ev\_Default

OUTLAW  
ANGARIAN  
MILKWAY GALAXY  
LEFT







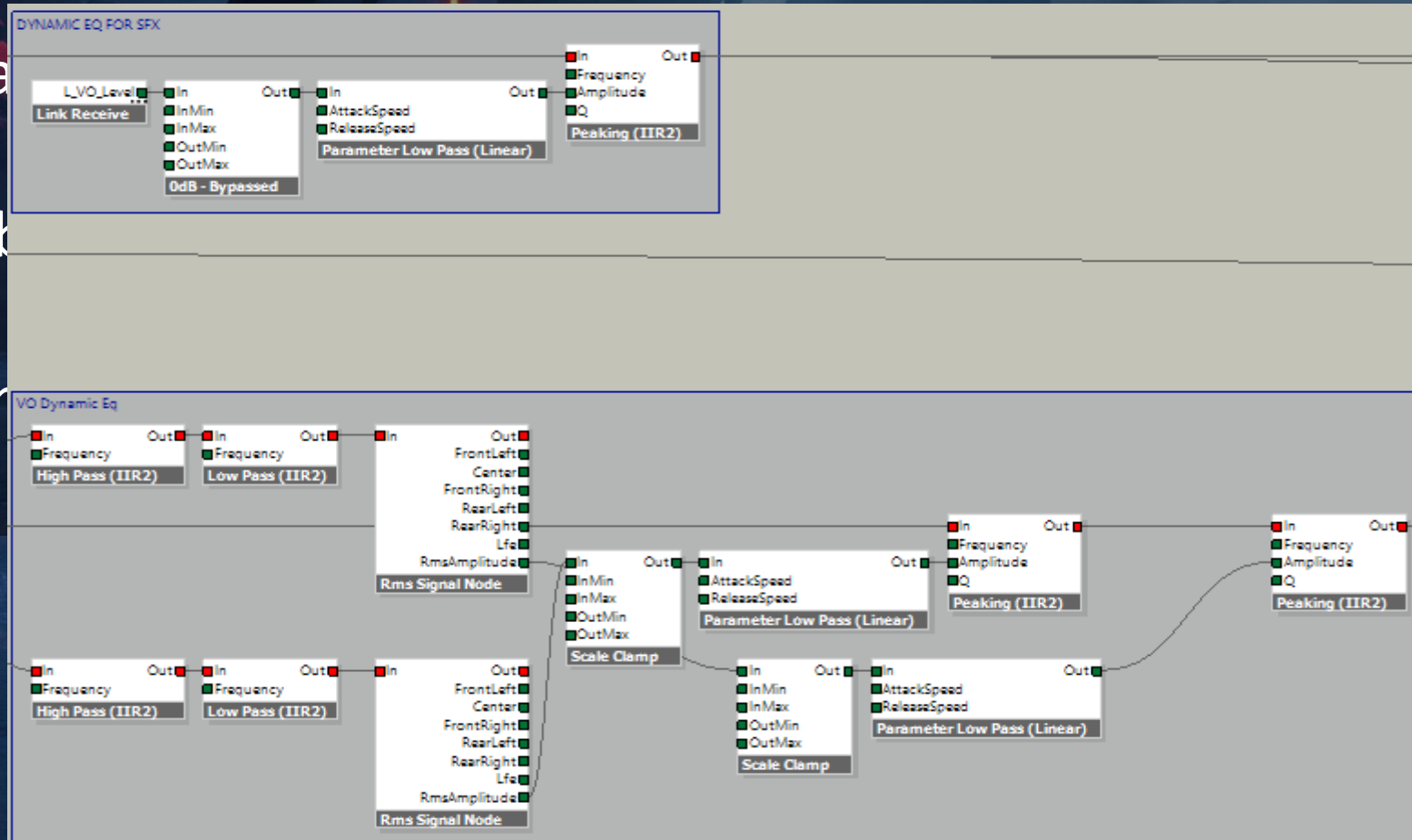
# Mixing and Mastering

- Spent 1 month mixing game prior to certification
- Game is 100 hrs+ - impossible to hear everything in that time
- Relied heavily on systems and implementation standards to assure quality



# Mixing and Mastering

- Setting standards for implementation for each different sound category
- Used primary
- Used Frostk
- Used dynam





# What's Next?

- Most of these systems have been carried over to Anthem
- New Systems:
  - Game Object Mixers
  - Navpath Obstruction
  - World Anchors
  - Contextual Ambient Presence System (CAPS)
  - More Quad Assets for Combat





Fin



# Questions?

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