Confronting the Audio Nemesis in Middle-earth: Shadow of Mordor

Maximizing Emotional Resonance in an Open World Environment

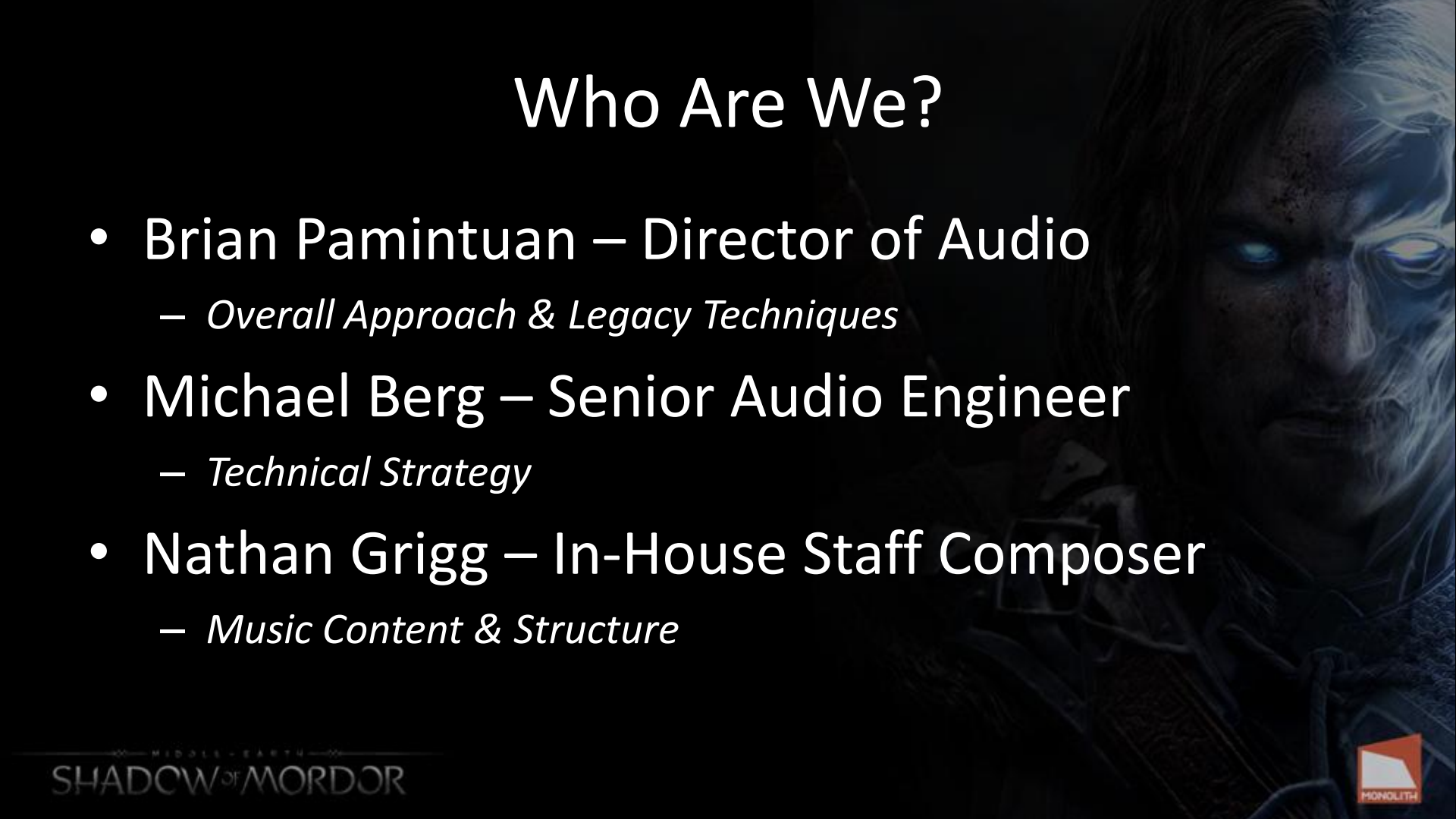
Brian Pamintuan
Michael Berg
Nathan Grigg

MIDDLE-EARTH SHADOW OF MORDOR

MONOLITH

Who Are We?

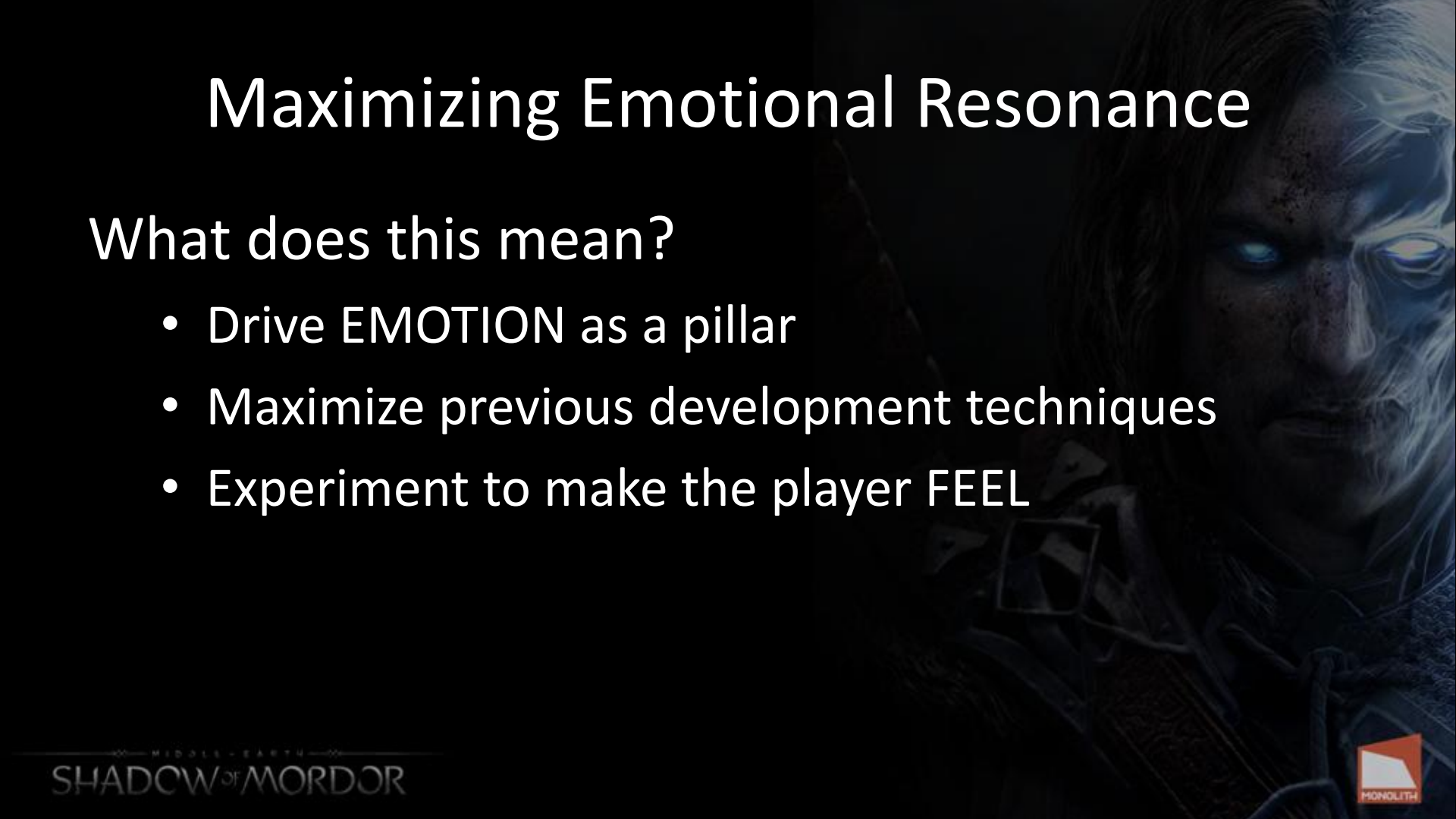
- Brian Pamintuan – Director of Audio
  - *Overall Approach & Legacy Techniques*
- Michael Berg – Senior Audio Engineer
  - *Technical Strategy*
- Nathan Grigg – In-House Staff Composer
  - *Music Content & Structure*



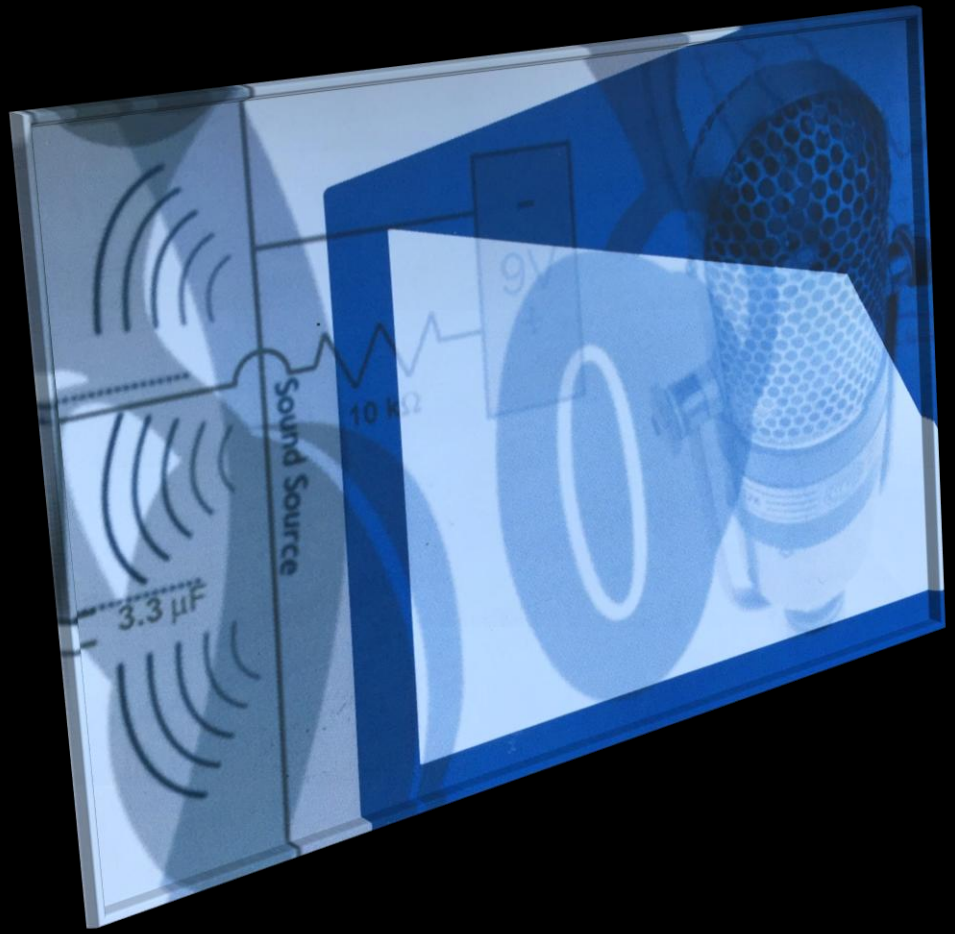
Maximizing Emotional Resonance

What does this mean?

- Drive EMOTION as a pillar
- Maximize previous development techniques
- Experiment to make the player FEEL



MIDDLE-EARTH
SHADOW OF MORDOR
MONOLITH



Audio Team Size

- 1 Director of Audio
- 2 Sound Designers
- 1 Composer
- 1 Audio Engineer
- 1 Audio Producer
- 2 Contractors
- 5 Dedicated Audio QA

SHADOW OF MORDOR

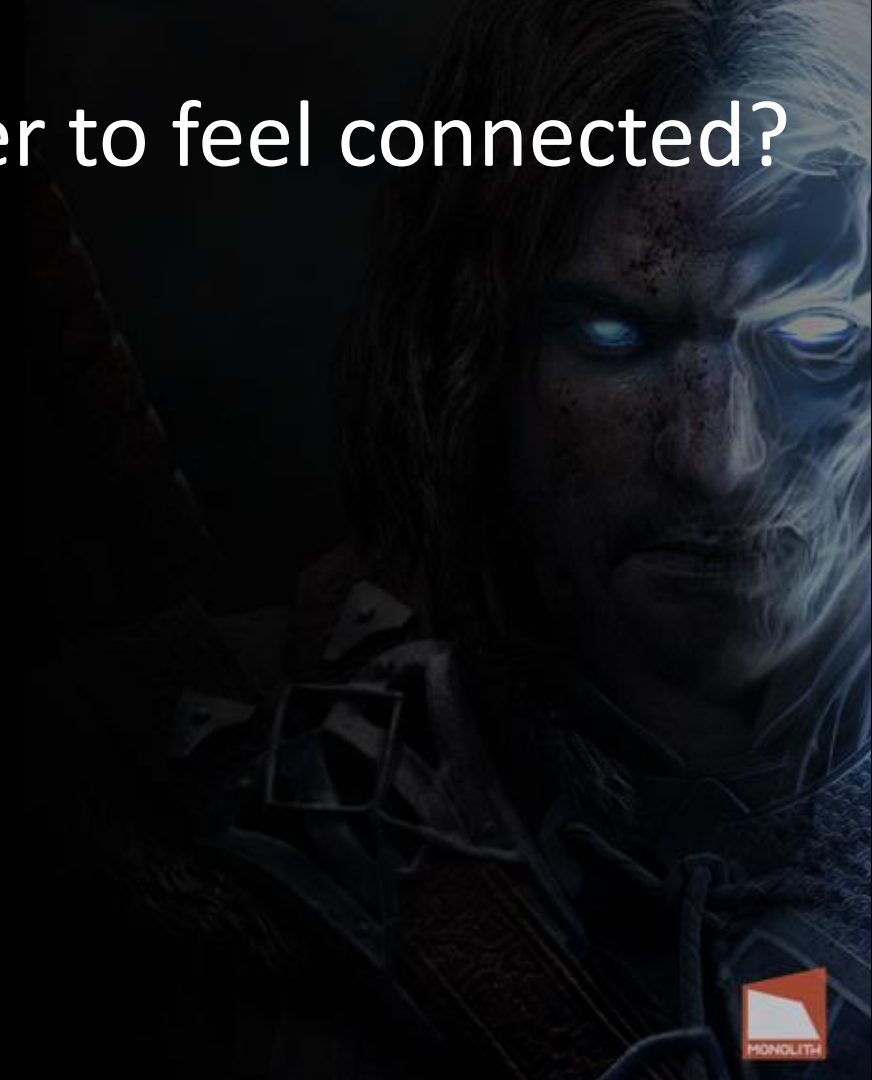
MIDDLE-EARTH
SHADOW OF MORDOR

MONOLITH

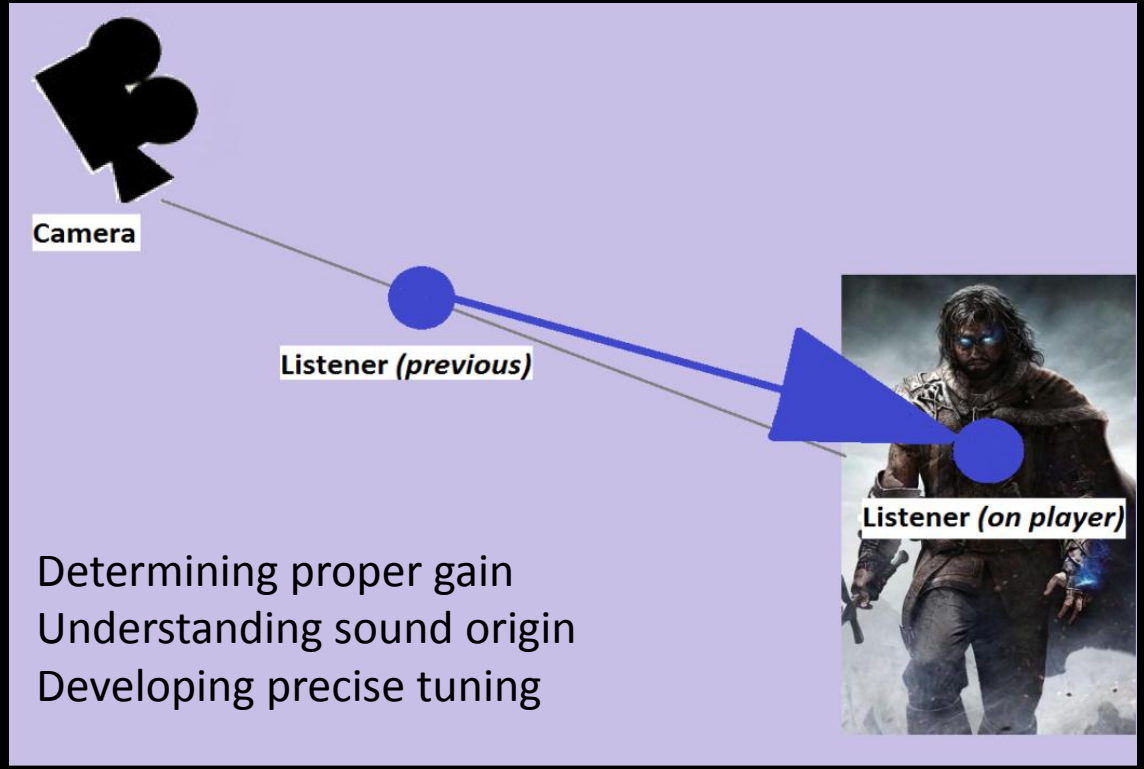
How do we get the player to feel connected to Talion?

How do we get the player to feel connected?

- Listener Position
- Dynamic Spikes
- PS4 Controller Speaker
- Music Combat
- Nemesis Showdowns



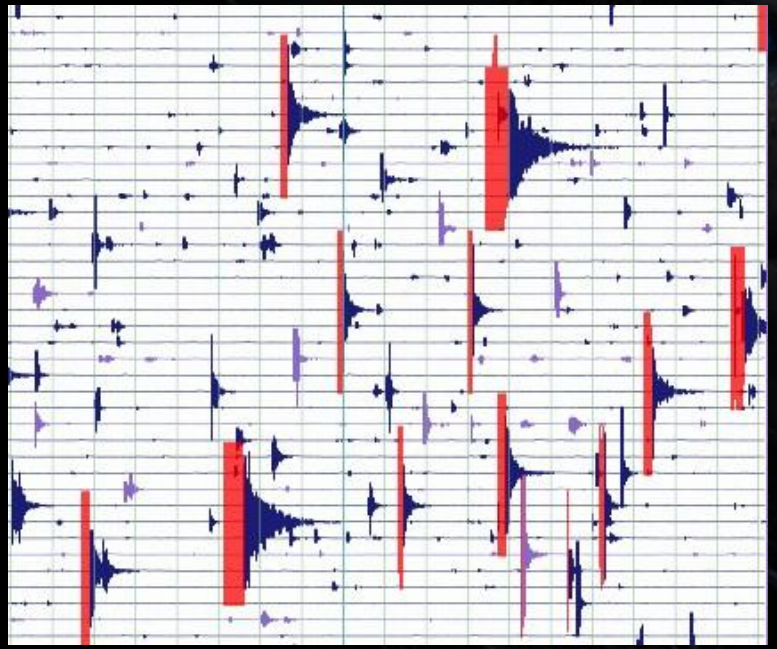
Listener Position



Determining proper gain
Understanding sound origin
Developing precise tuning

Dynamic Spikes

- Audio ducking
- Slow-motion camera
- Pre & Post sfx



Dynamic Spikes

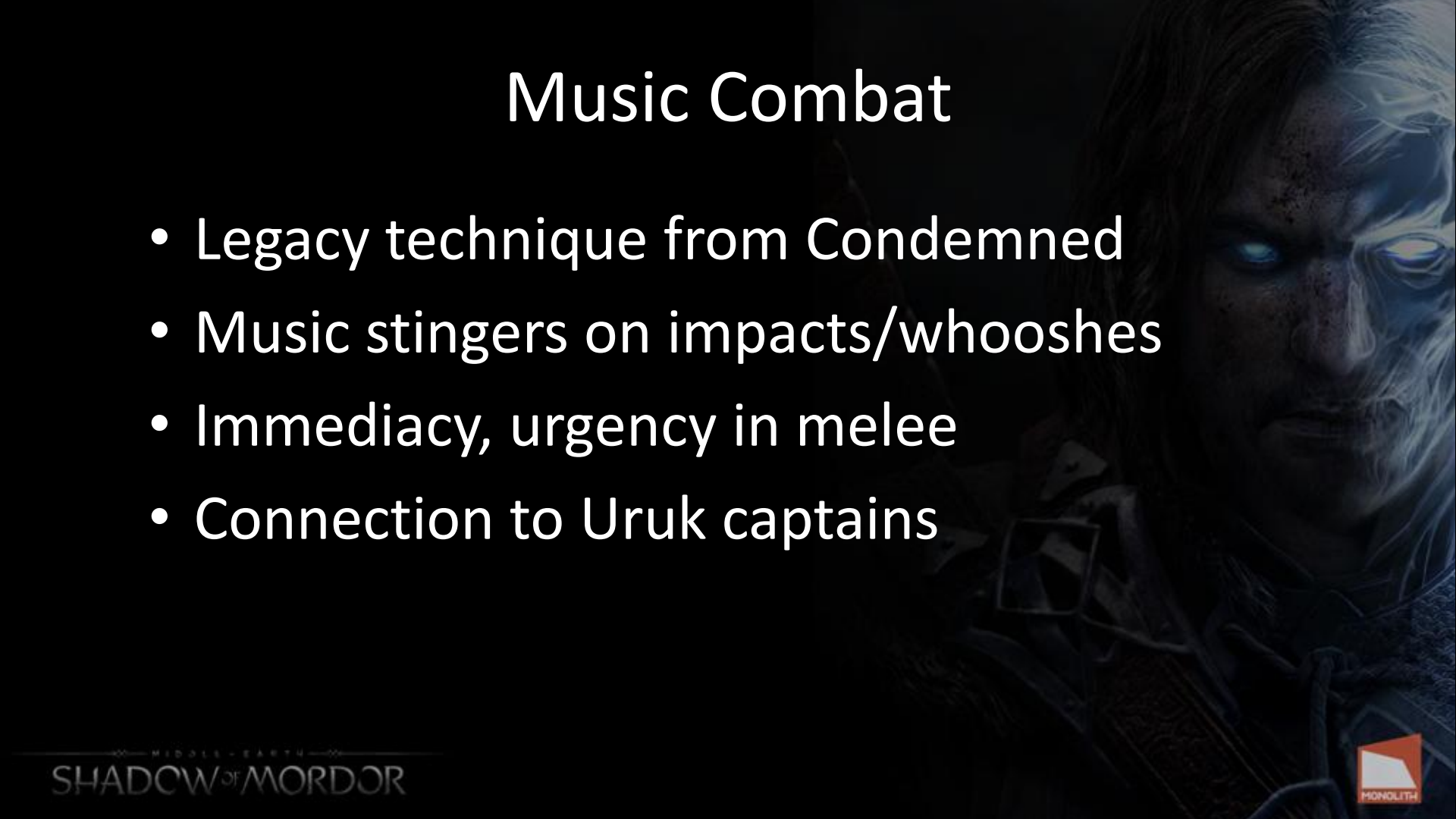
MIDDLE-EARTH
SHADOW OF MORDOR

MONOLITH

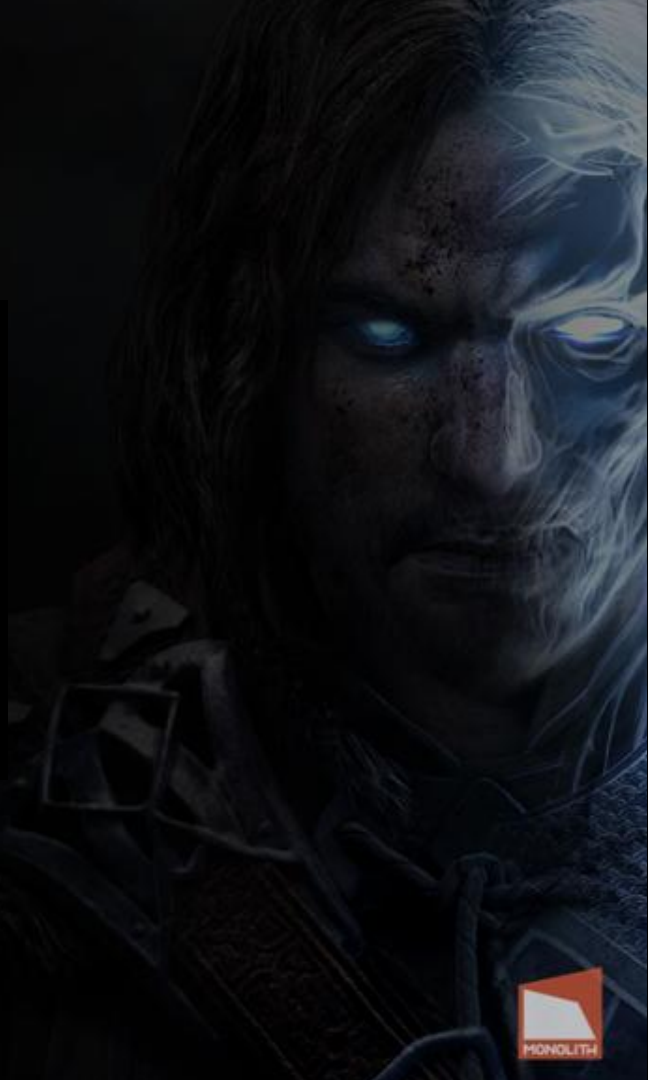
PS4 Controller Speaker

Music Combat

- Legacy technique from Condemned
- Music stingers on impacts/whooshes
- Immediacy, urgency in melee
- Connection to Uruk captains



Music Combat

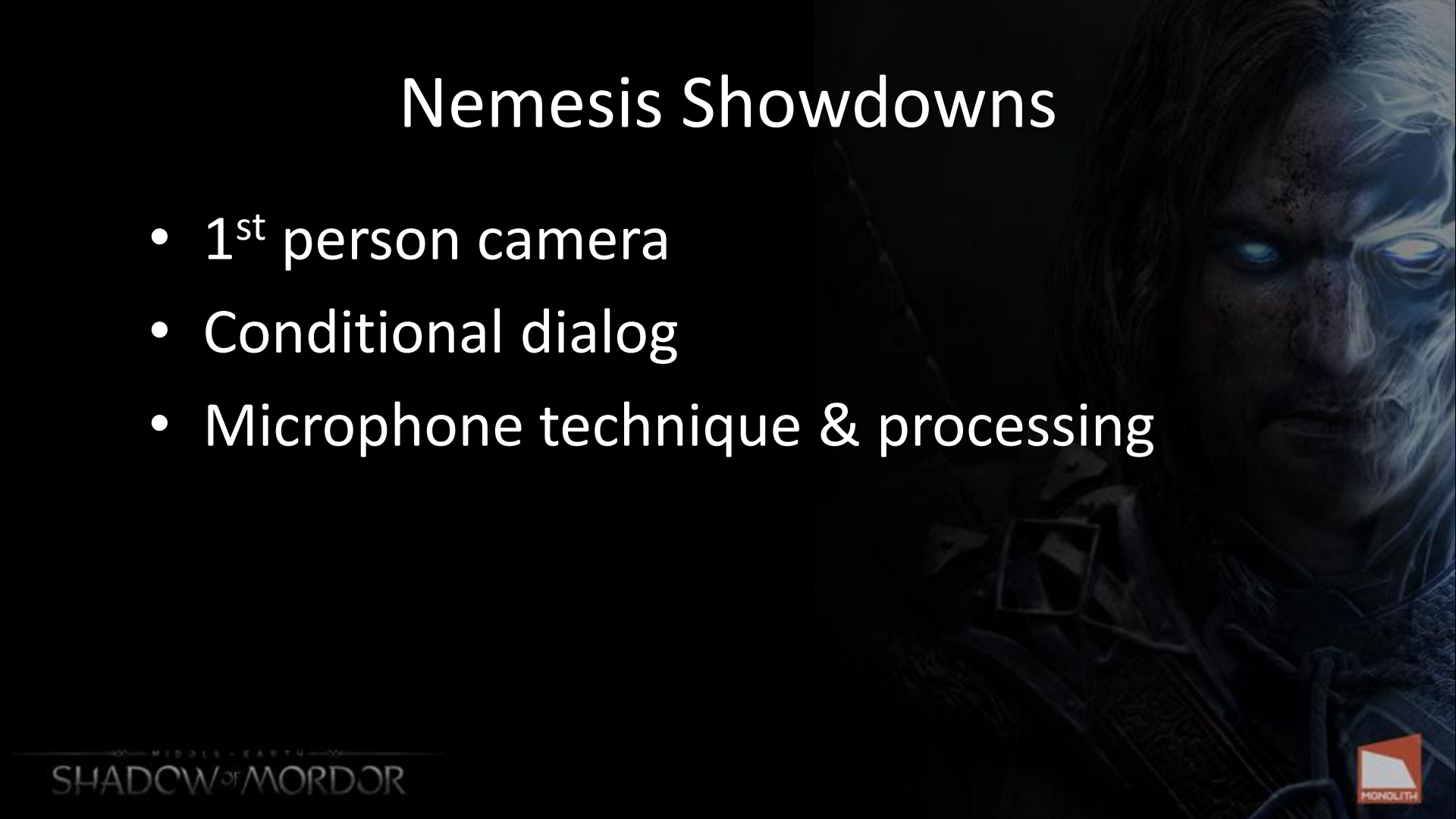


MIDDLE-EARTH
SHADOW OF MORDOR

MONOLITH

Nemesis Showdowns

- 1st person camera
- Conditional dialog
- Microphone technique & processing



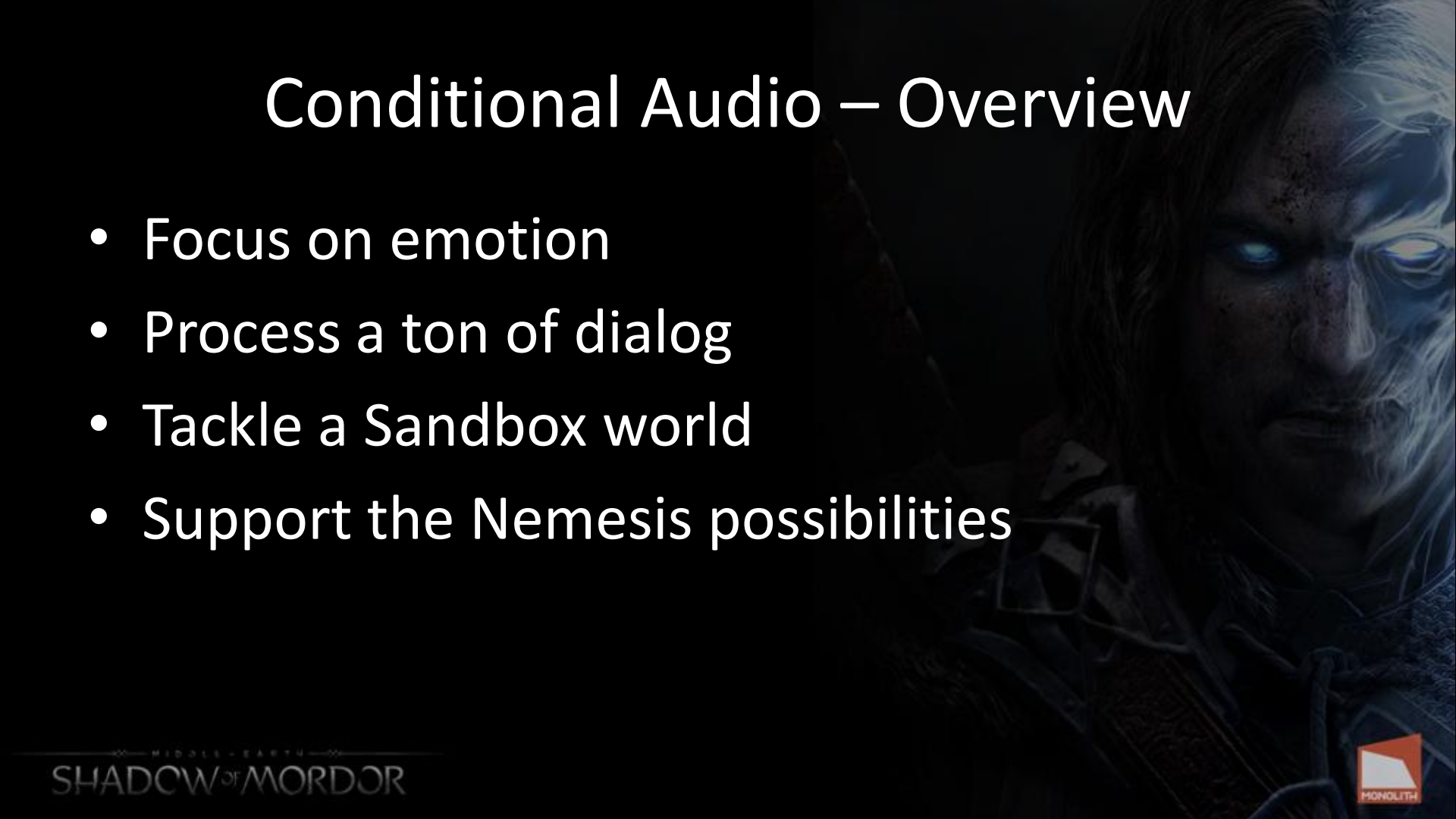
Monolith's Approach

- Focus on emotion
- Leverage experience
- Iterate to quality

MIDDLE-EARTH
SHADOW OF MORDOR
MONOLITH

Conditional Audio – Overview

- Focus on emotion
- Process a ton of dialog
- Tackle a Sandbox world
- Support the Nemesis possibilities

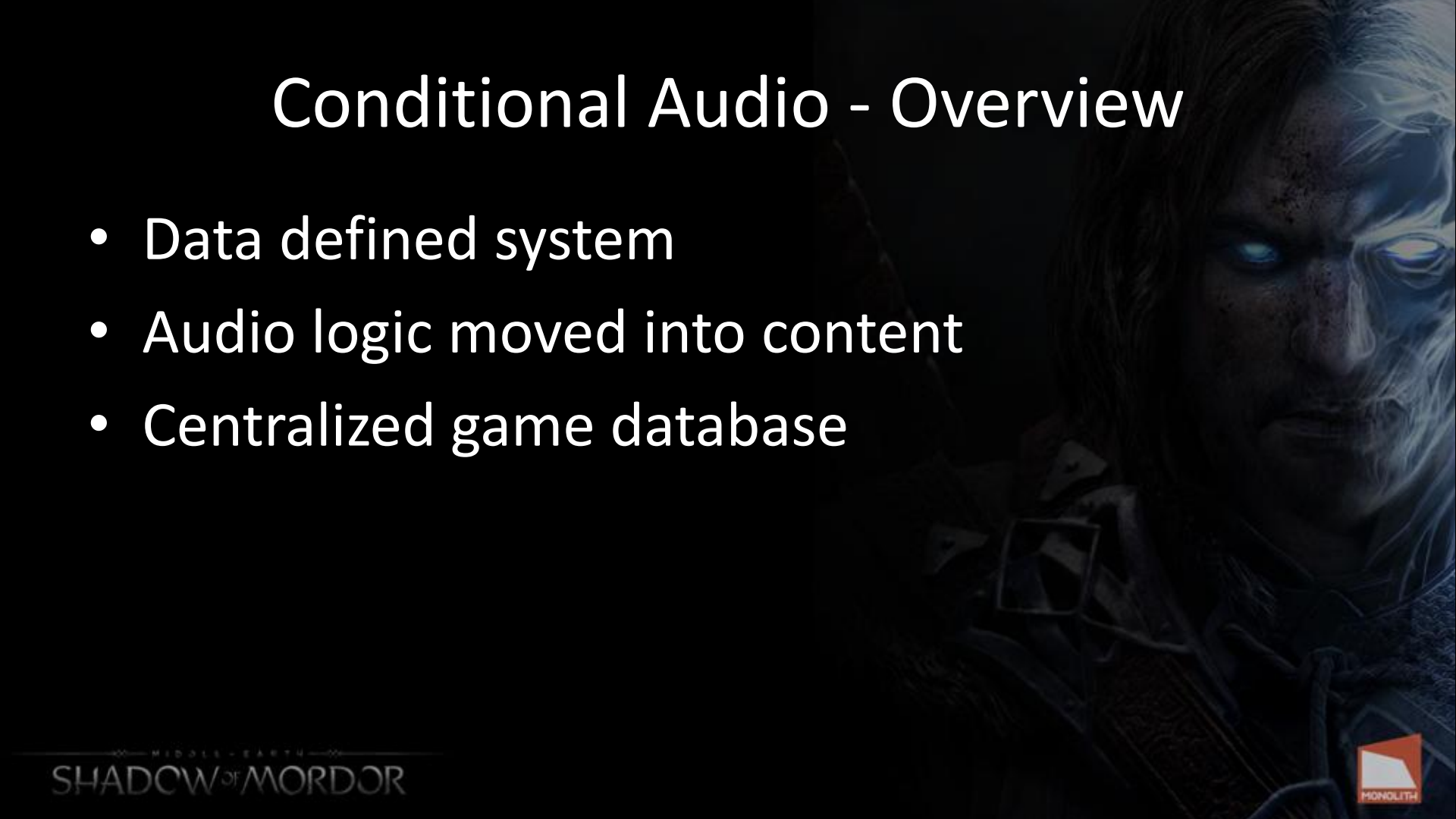


Conditional Audio – Inspiration

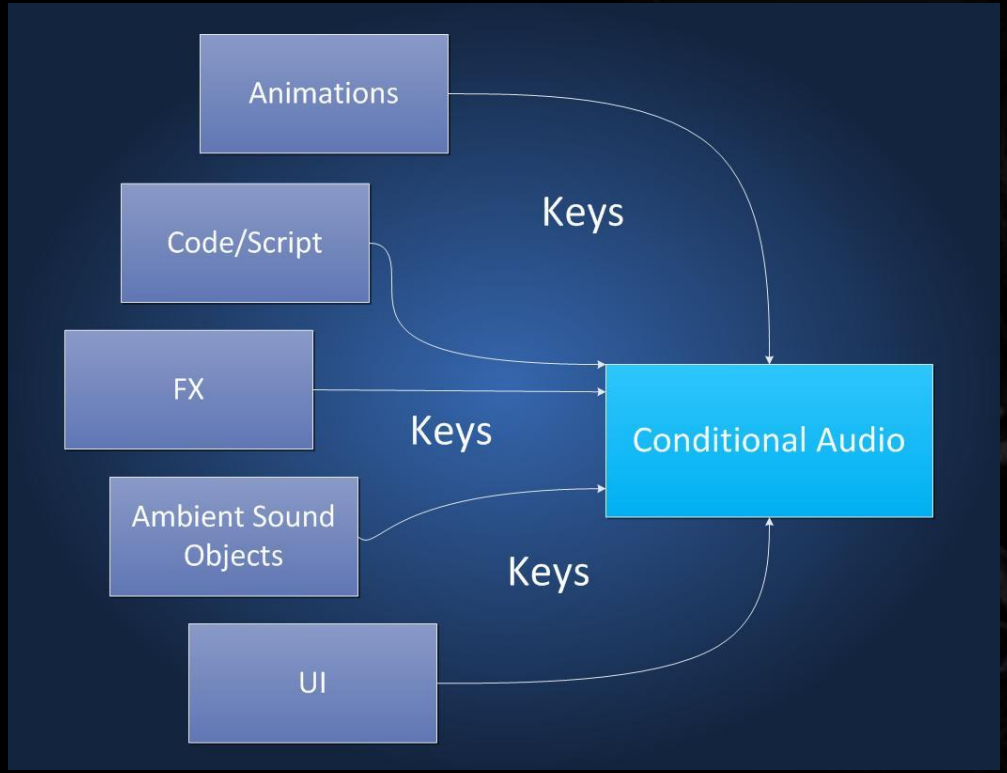
- Build on event-based sound engines
- Follow the game team's approach
- Learn from previous GDC dialog talks:
  - GDC 2012, "AI-driven Dynamic Dialog through Fuzzy Pattern Matching. Empower Your Writers!" by Elan Ruskin (Valve)
  - GDC 2014, "Context-Aware Character Dialog in *The Last of Us*" by Jason Gregory (Naughty Dog)

Conditional Audio - Overview

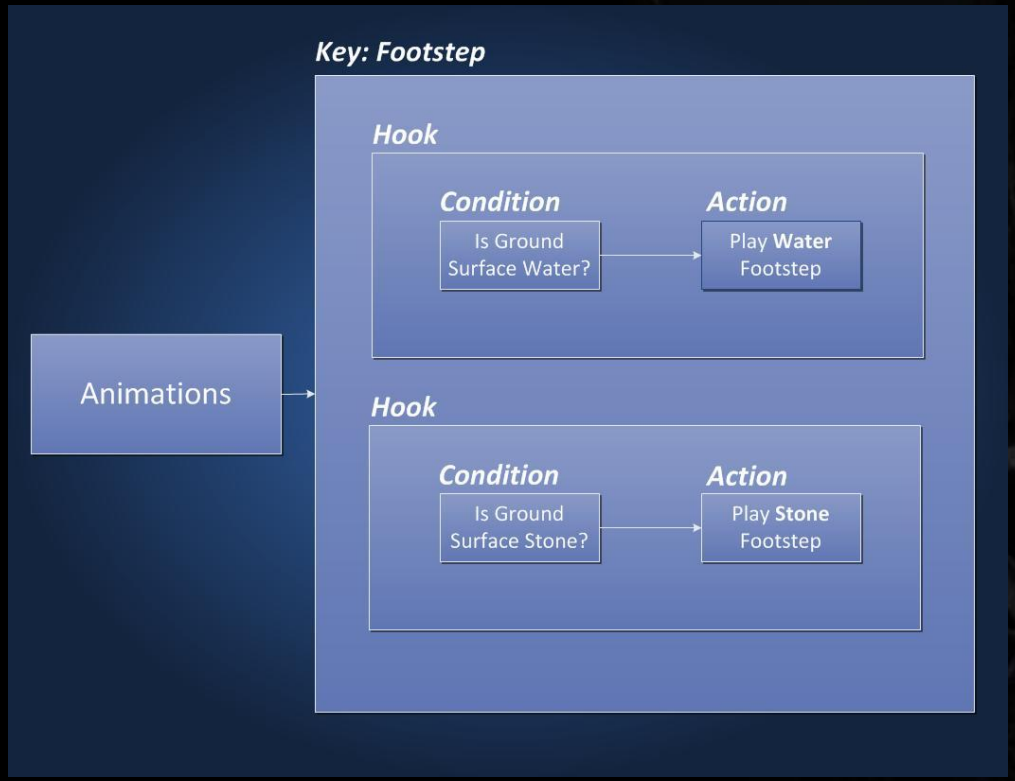
- Data defined system
- Audio logic moved into content
- Centralized game database



Conditional Audio - Keys

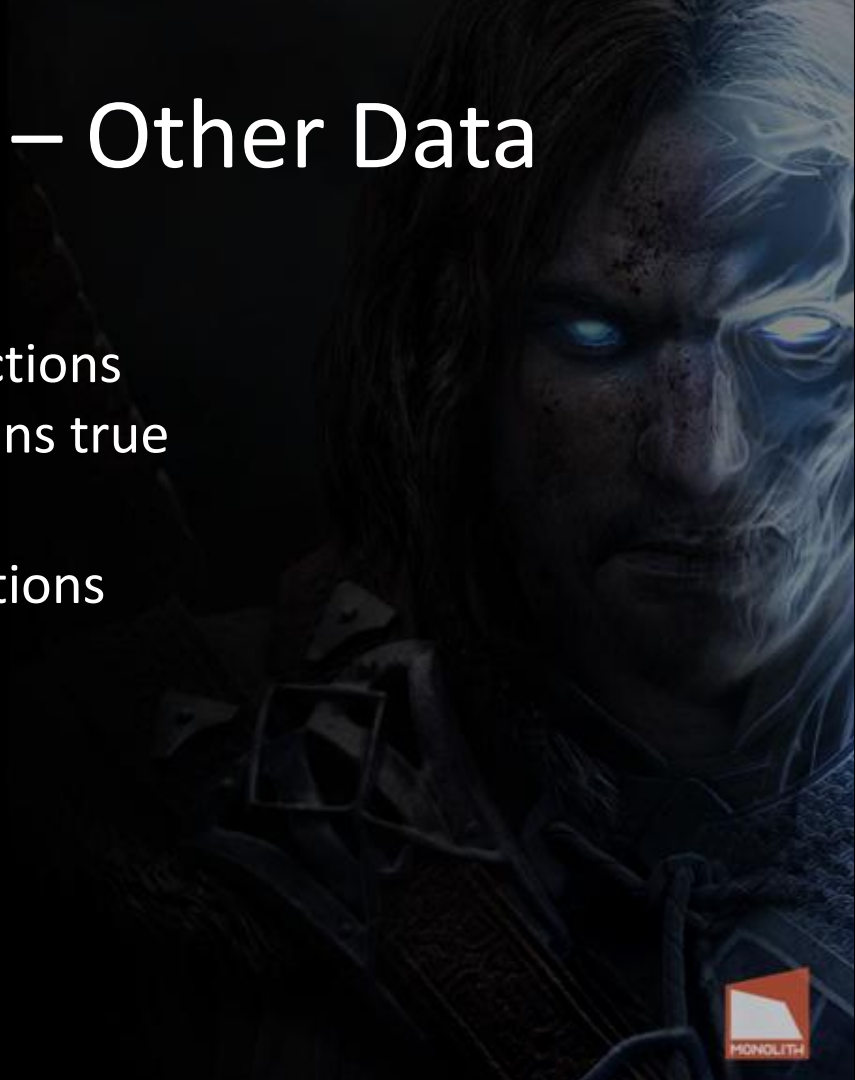


Conditional Audio – Other Data

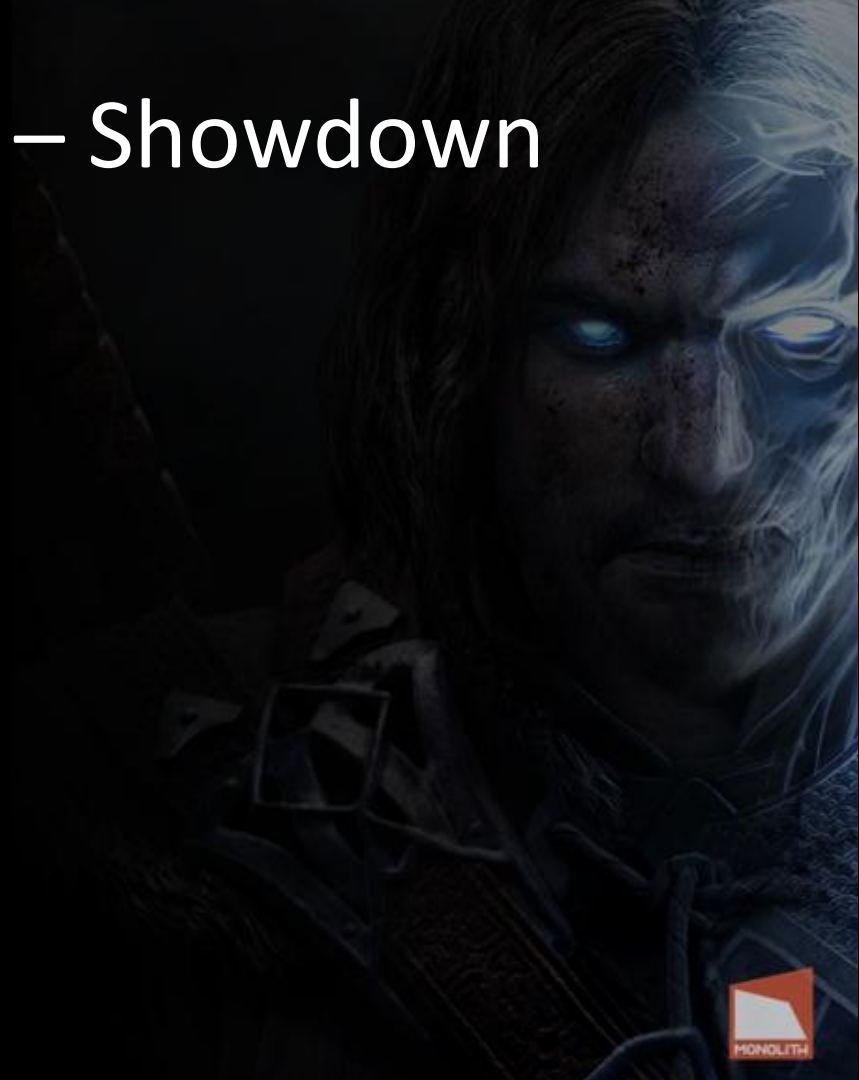


Conditional Audio – Other Data

- Hooks
  - Contain a list of conditions and actions
  - Execute the actions, if all conditions true
- Conditions
  - Support game and variable conditions
- Actions
  - Post a sound event
  - Play facial/body animations
  - Set a variable



Conditional Audio – Showdown



MIDDLE-EARTH SHADOW OF MORDOR

MONOLITH

Conditional Audio – Showdown

MIDDLE-EARTH
SHADOW OF MORDOR

MONOLITH

Conditional Audio – Efforts

Conditional Audio – Efforts

MIDDLE-EARTH SHADOW OF MORDOR

MONOLITH

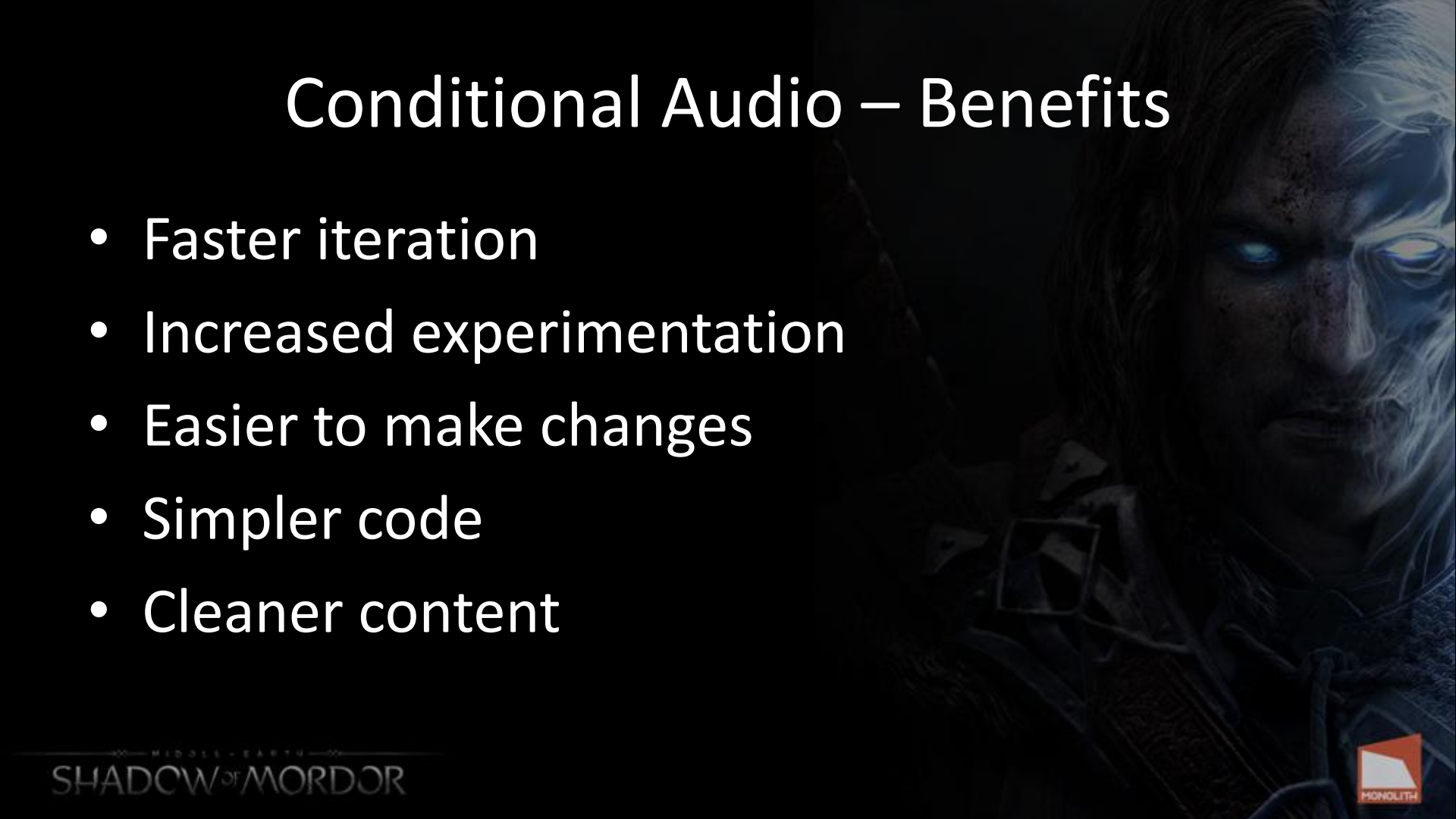
Conditional Audio – Rain

Conditional Audio – Rain

MIDDLE-EARTH
SHADOW OF MORDOR

Conditional Audio – Benefits

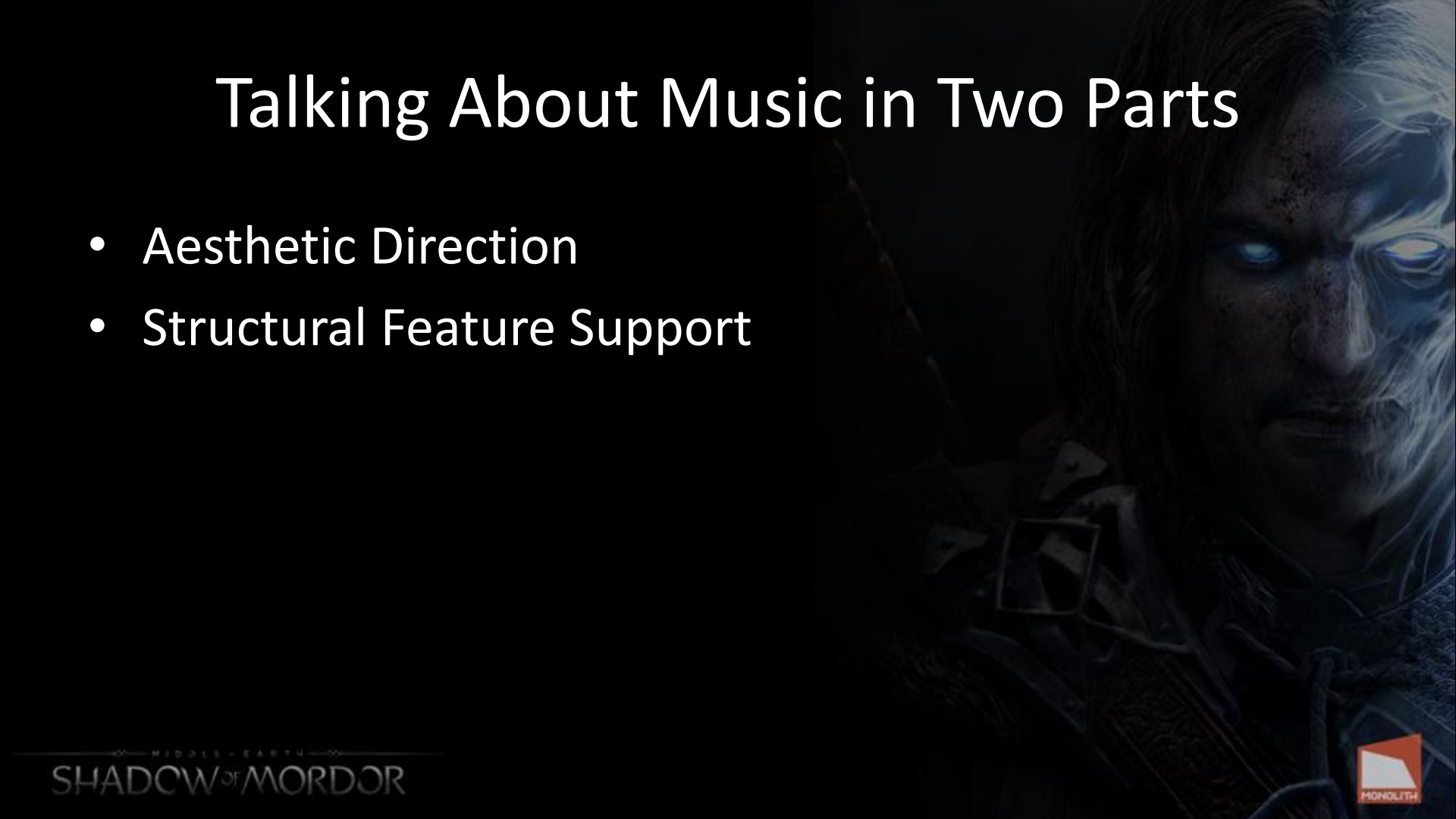
- Faster iteration
- Increased experimentation
- Easier to make changes
- Simpler code
- Cleaner content



MIDDLE-EARTH
SHADOW OF MORDOR
MONOLITH

Talking About Music in Two Parts

- Aesthetic Direction
- Structural Feature Support



Aesthetic DNA

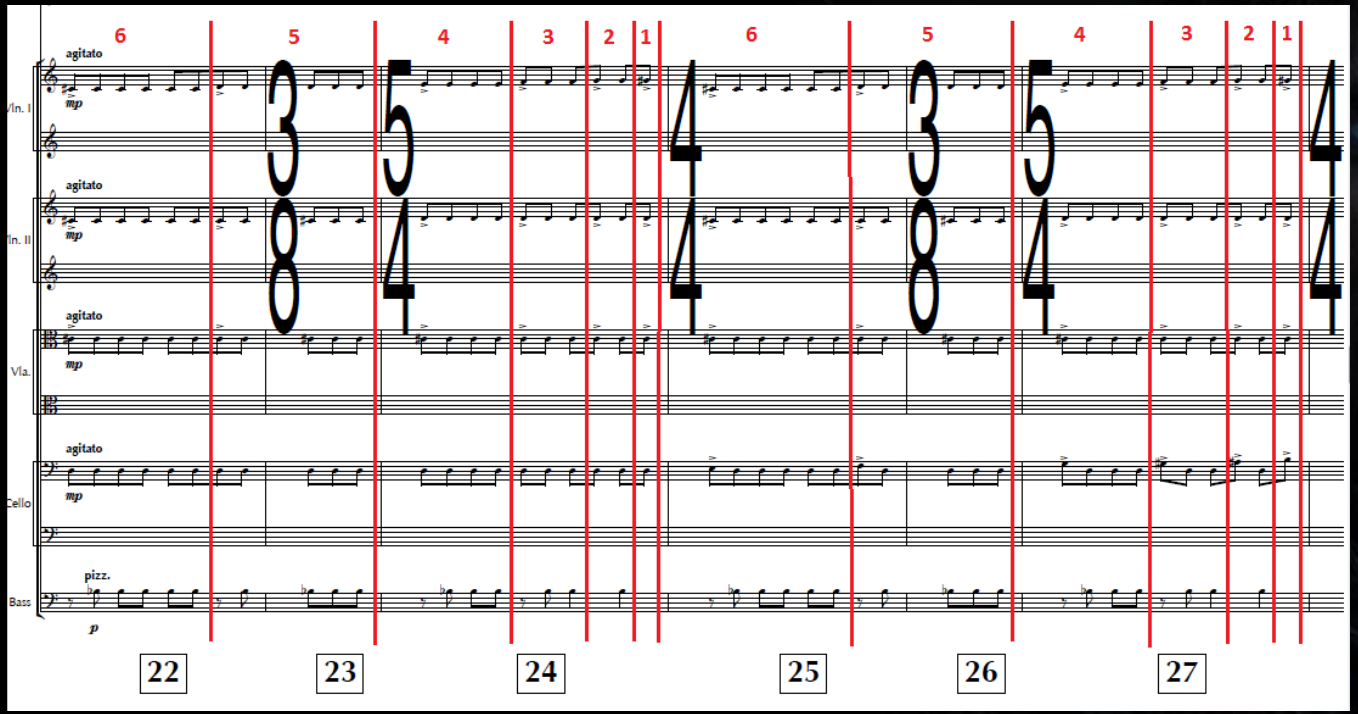
- Timbre: Non-traditional source and processing
- Harmony: Sustaining tension through dissonance
- Rhythm & asymmetry

DNA Samples

The Gravewalker

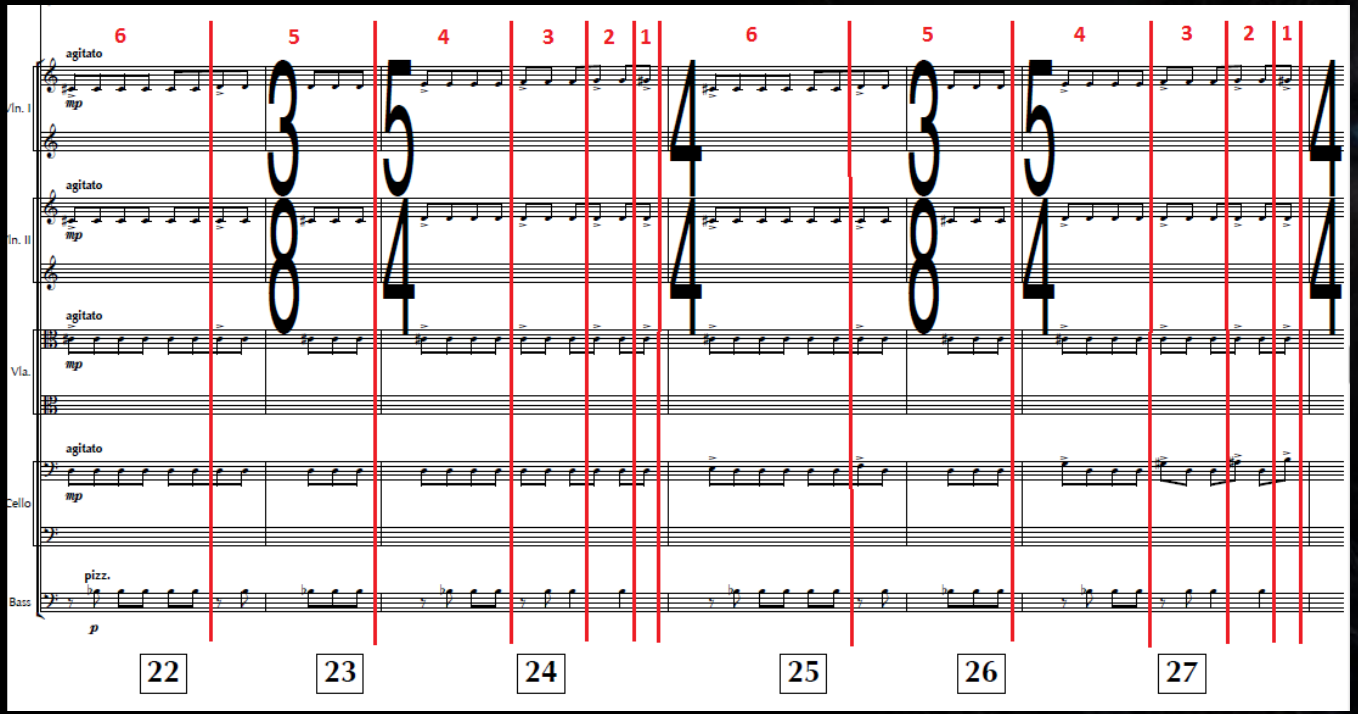
Bright Master

The Gorthaur



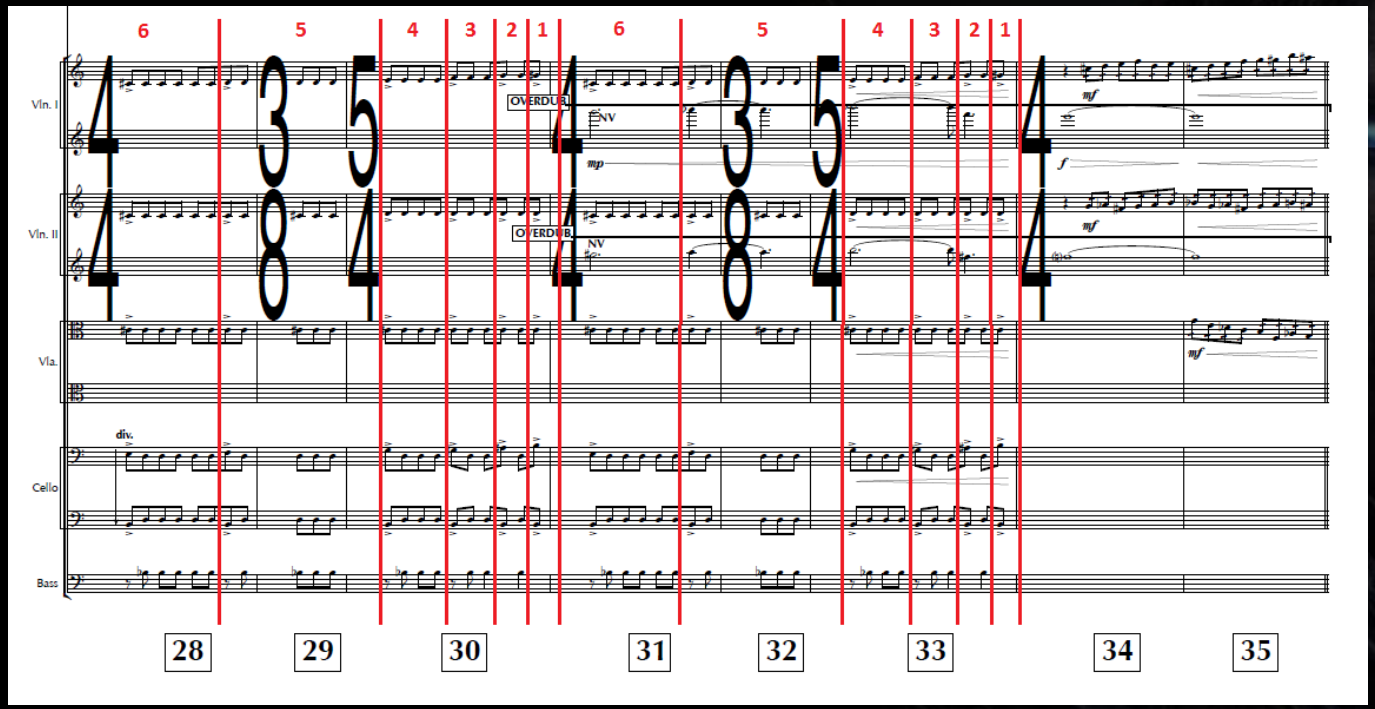
MIDDLE-EARTH SHADOW OF MORDOR
MONOLITH

The Gorthaur



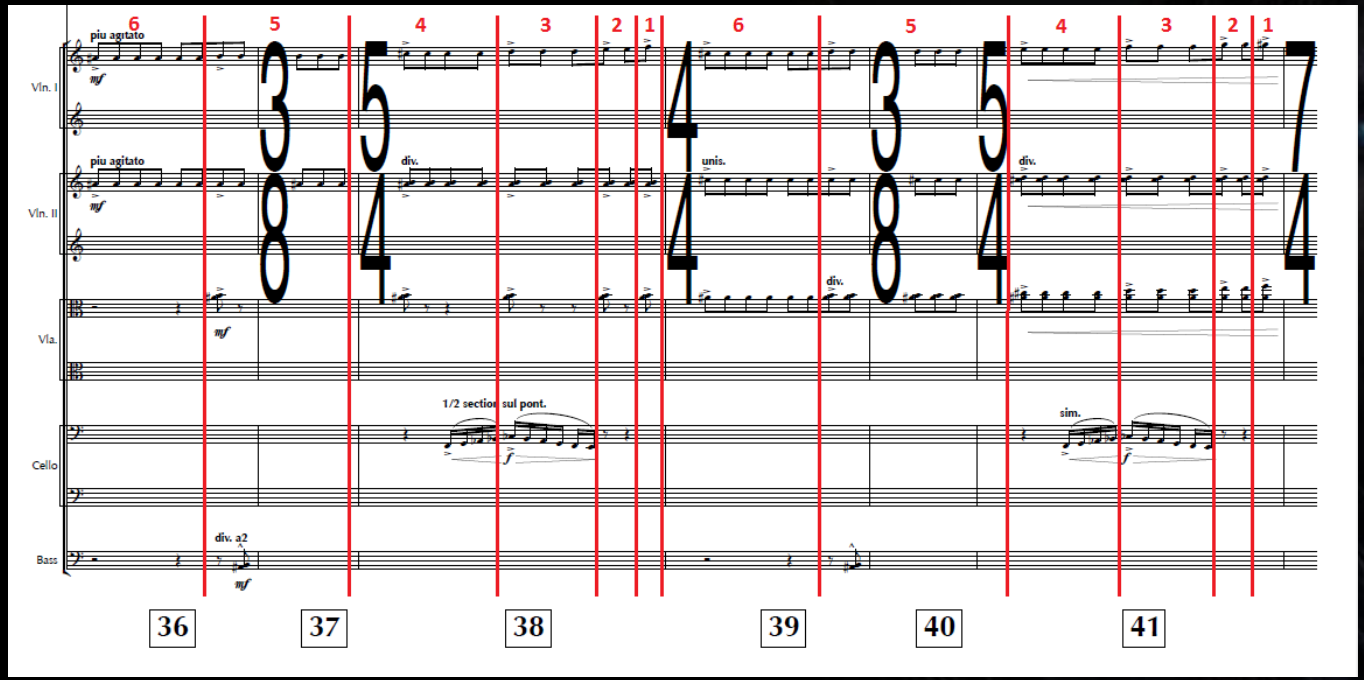
MIDDLE-EARTH SHADOW OF MORDOR
MONOLITH

The Gorthaur



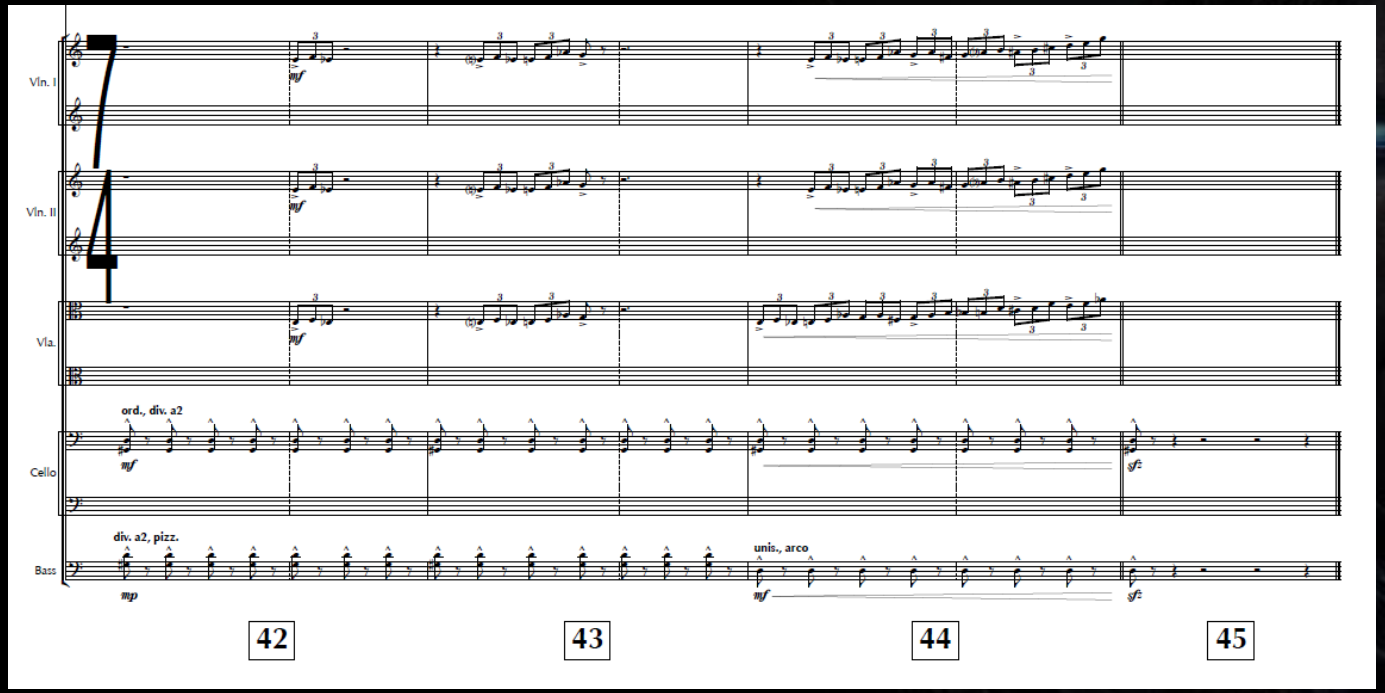
MIDDLE-EARTH SHADOW OF MORDOR
MONOLITH

The Gorthaur



MIDDLE-EARTH SHADOW OF MORDOR
MONOLITH

The Gorthaur

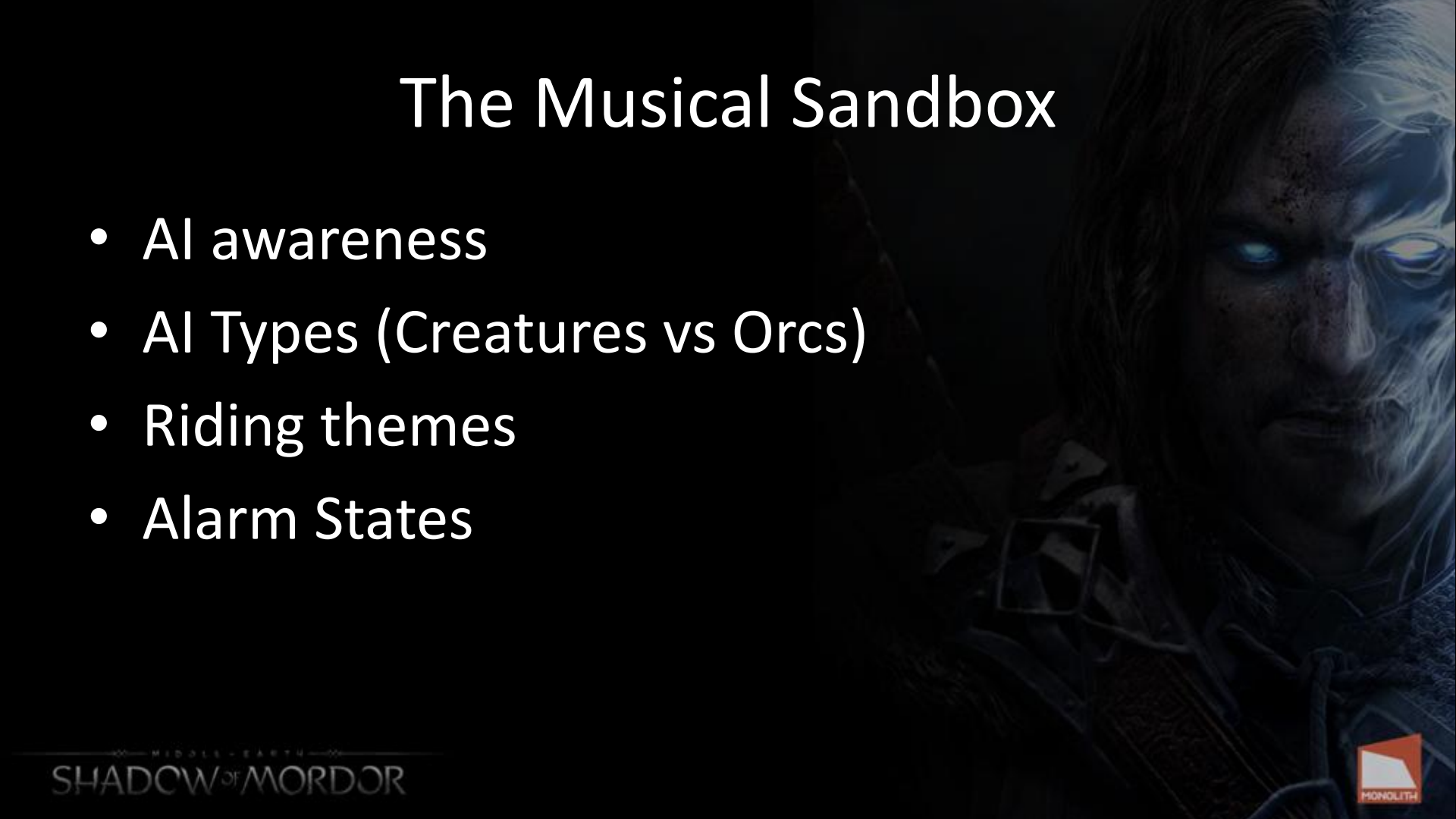


MIDDLE-EARTH SHADOW OF MORDOR
MONOLITH

MIDDLE-EARTH
SHADOW OF MORDOR
MONOLITH

The Musical Sandbox

- AI awareness
- AI Types (Creatures vs Orcs)
- Riding themes
- Alarm States



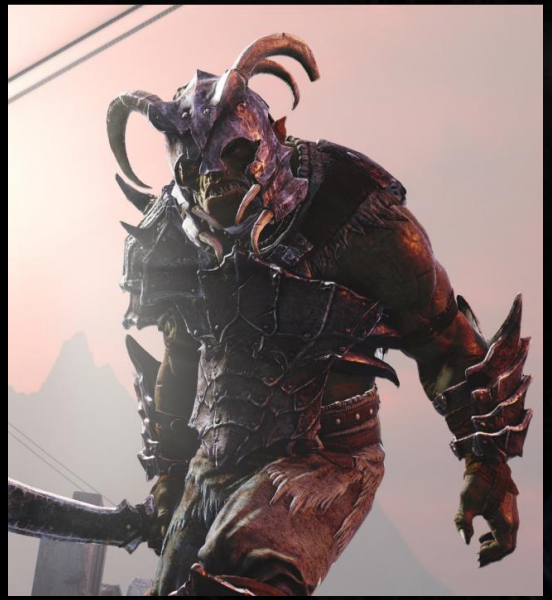
A Day in the Life of Talion

MIDDLE-EARTH
SHADOW OF MORDOR

MONOLITH

Warchief Music

- Chanting
- Layered walla
- Tempo synchronization

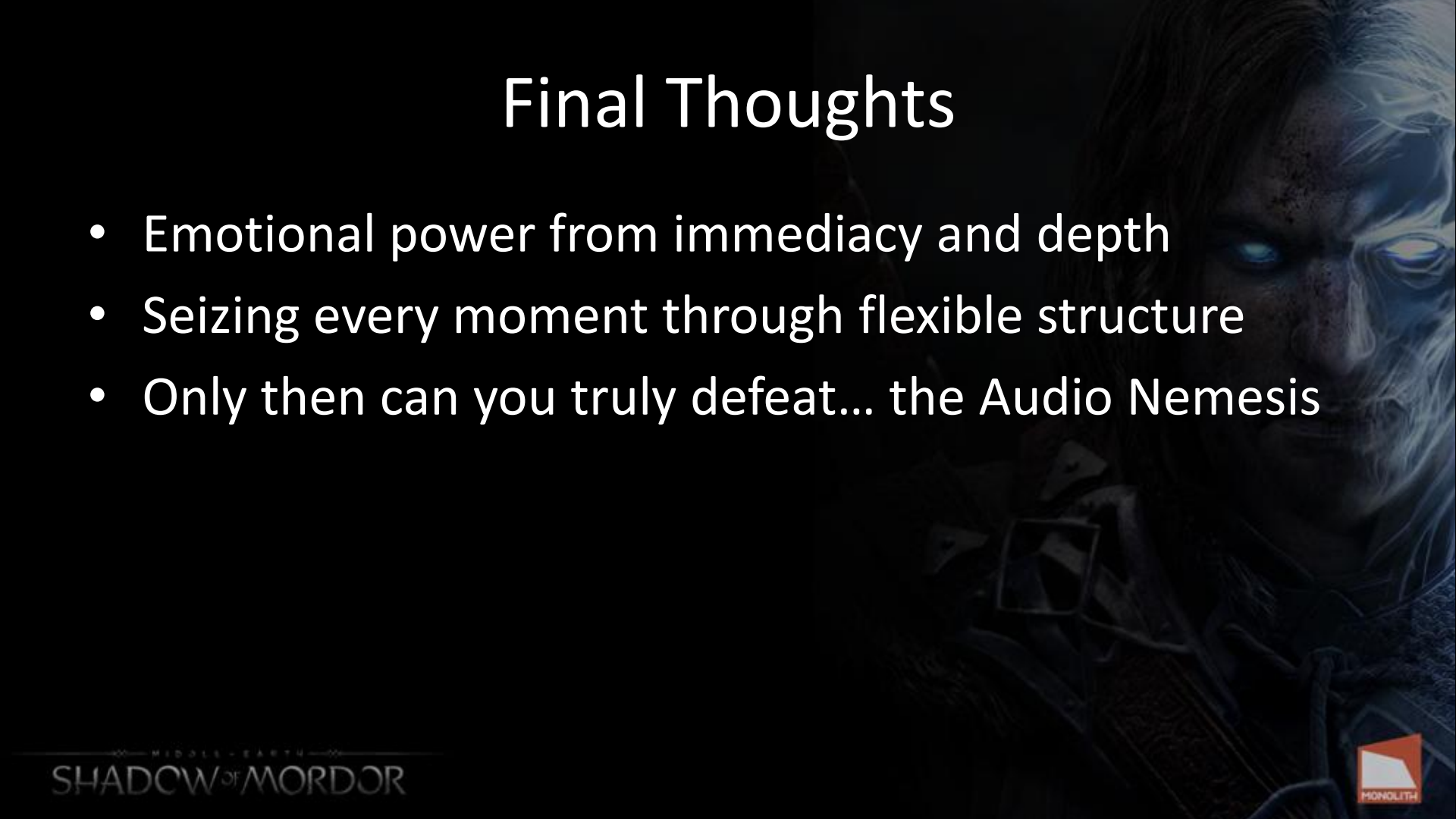


Warchief Music

MIDDLE-EARTH
SHADOW OF MORDOR

Final Thoughts

- Emotional power from immediacy and depth
- Seizing every moment through flexible structure
- Only then can you truly defeat… the Audio Nemesis

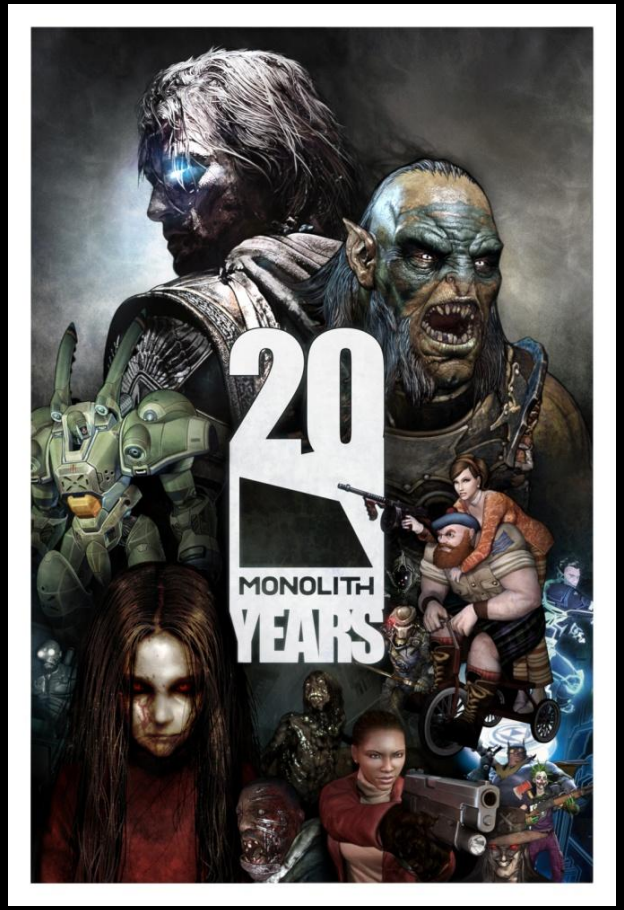


MIDDLE-EARTH
SHADOW OF MORDOR
MONOLITH

Questions?

MIDDLE-EARTH
SHADOW OF MORDOR

MONOLITH



MONOLITH IS HIRING!

www.lith.com/Jobs

MIDDLE-EARTH
SHADOW OF MORDOR

MONOLITH