

VRDC



“To Be With Hamlet”

Recreating Theatre’s Intimacy in VR

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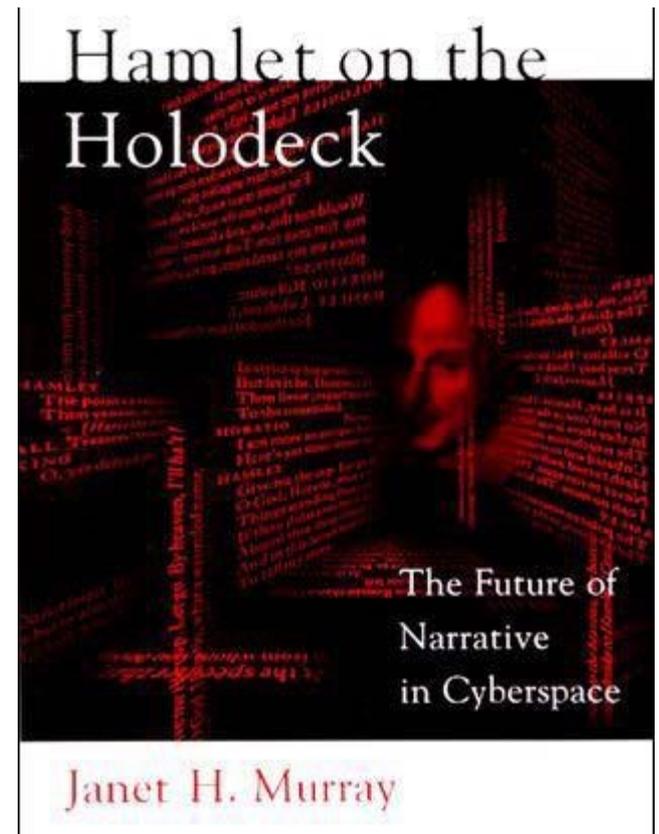
To Be With Hamlet
Live Theater in Virtual Reality

VR17C

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Why *Hamlet*?

- Seminal text from 1997
 - Interactive media
 - Game Studies
 - A provocation
- VR allows us to prototype holodeck-like experiences.



Why *Hamlet*?

- Hamlet is a ghost story, and VR is great for spooky, scary, supernatural.
- Show how VR can be used to illuminate less appreciated aspects of canonical stories.
(e.g. in Hamlet: competing belief systems concerning the afterlife and the immortal soul.)



A Scene From Hamlet, Live in VR



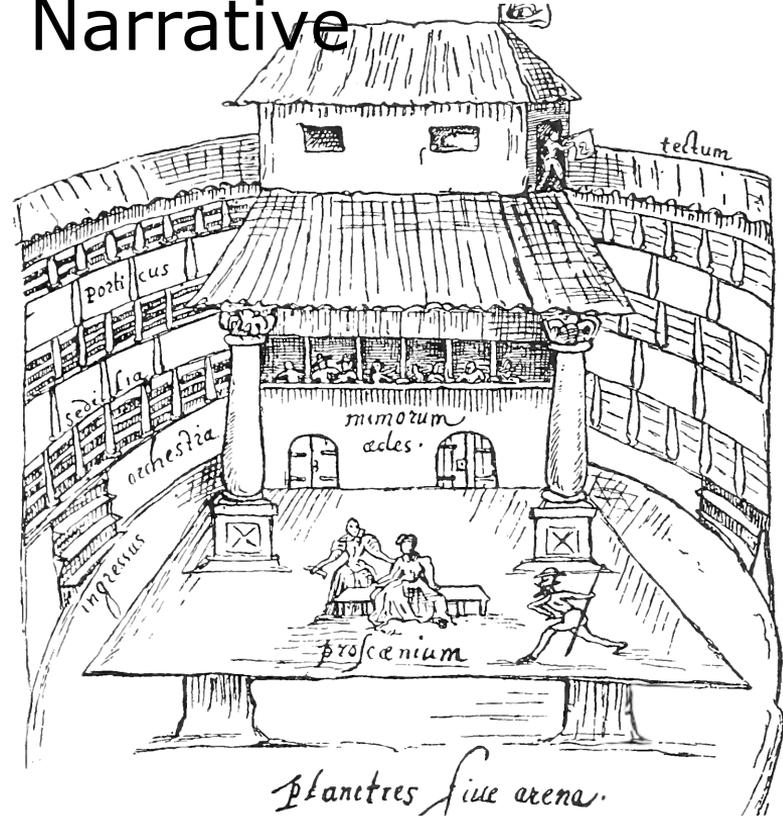
Key Elements for Compelling Narrative Experiences in VR

- Fully 3D
- Spatial staging
- Continuous action
- Believable characters
- Audience engagement

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Theater has been doing this for millennia.



“Theatre is pre-eminently a spatial medium, for it can dispense with language... but never with space.”

Wiles, David. TRAGEDY IN ATHENS: PERFORMANCE SPACE AND THEATRICAL MEANING. Cambridge University Press, 1997.

This applies to VR as well.



Immersive Theater

Sleep No More, Punchdrunk



Why Use VR?

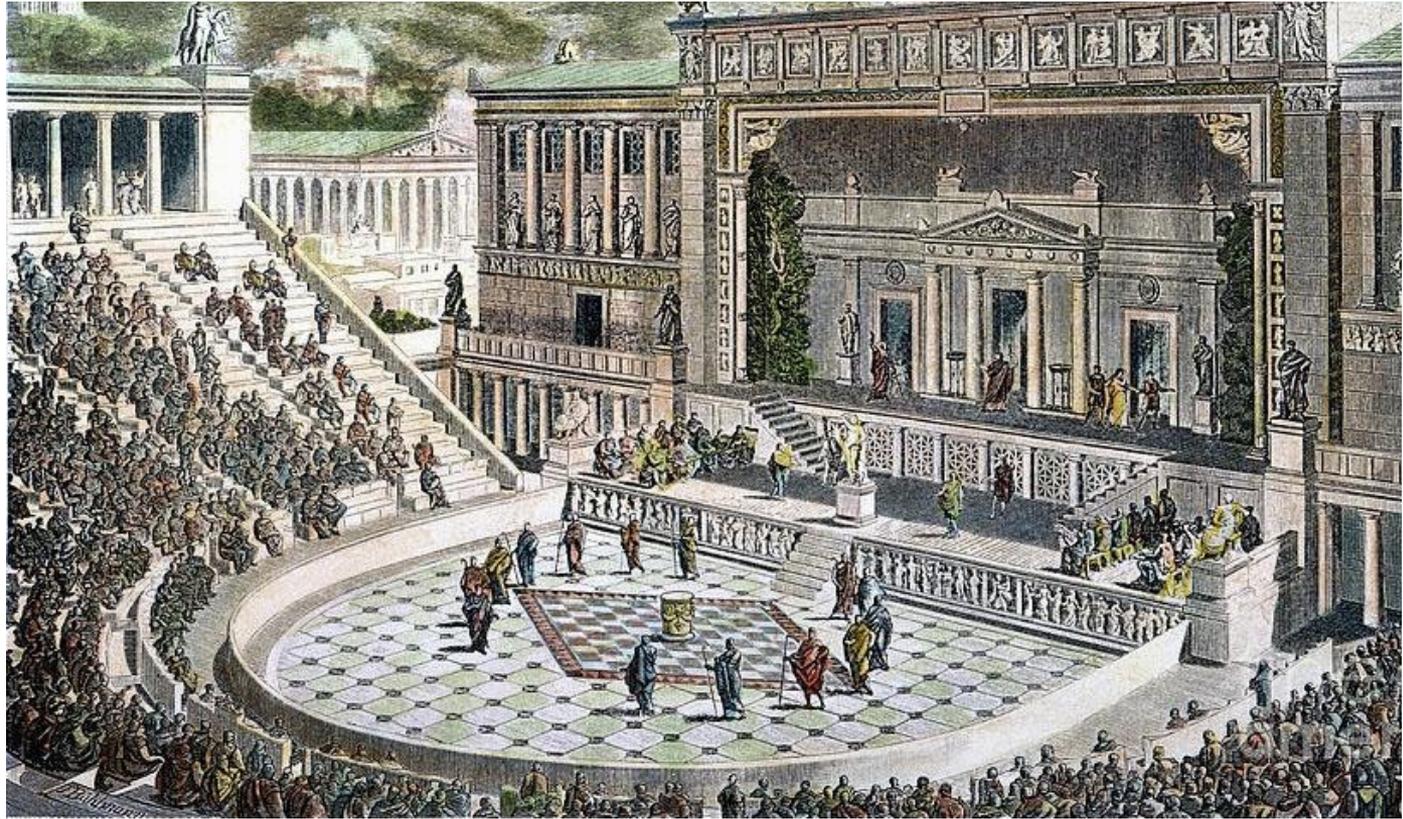
- Theater is the original Virtual Reality.
- Current VR tech allows for compelling immersion plus all the storytelling magic of computer generated imagery.
- The basic tools for narrative VR are the same as theater.
- Continuous cultural tradition

I can take any empty space and call it a bare stage. A man walks across this empty space whilst someone else is watching him, and this is all that is needed for an act of theatre to be engaged.

Peter Brook, *The Empty Space*

Liveness is the key to the theatrical experience.

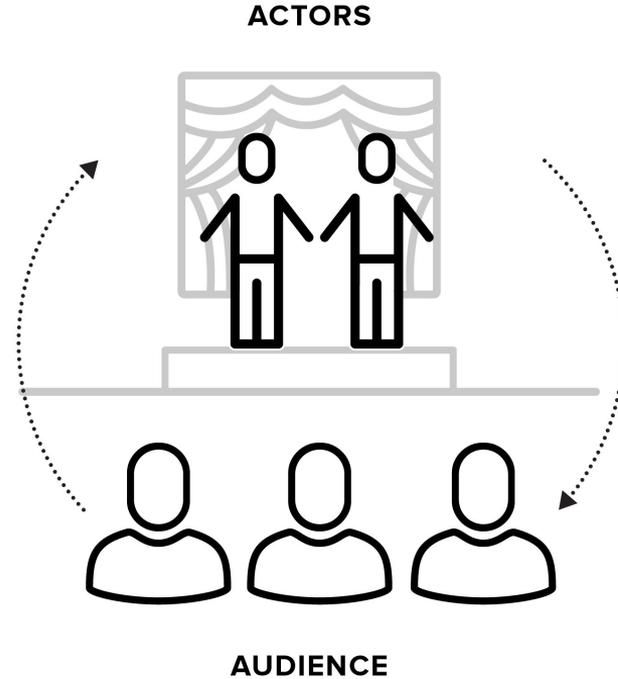
Theatre Is Social



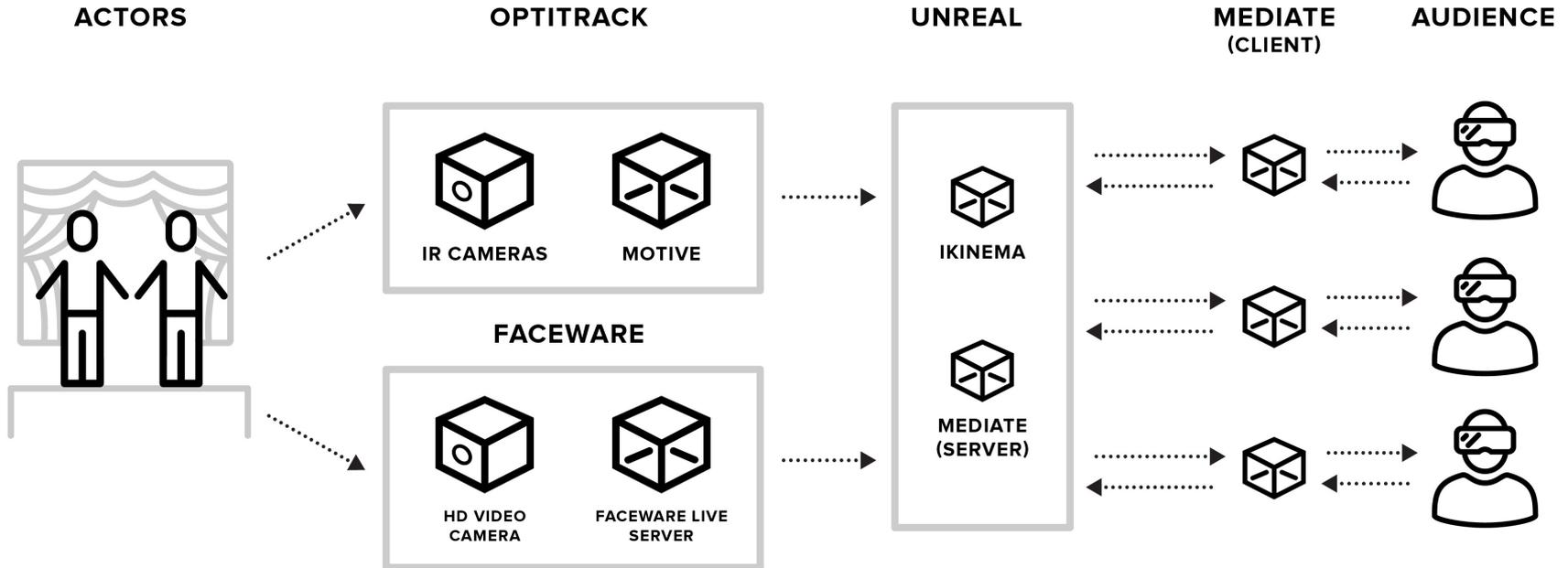
Theater Provides Presence

- Feeling that you are there: the world around you is convincing
- Feeling that the characters and the other audience members are there: they move and act like real people, and respond to you

System Diagram: Live Theater



System Diagram: Live Theater in VR



How did we get here?



The Return, Metropolitan Museum of Art, July 2015

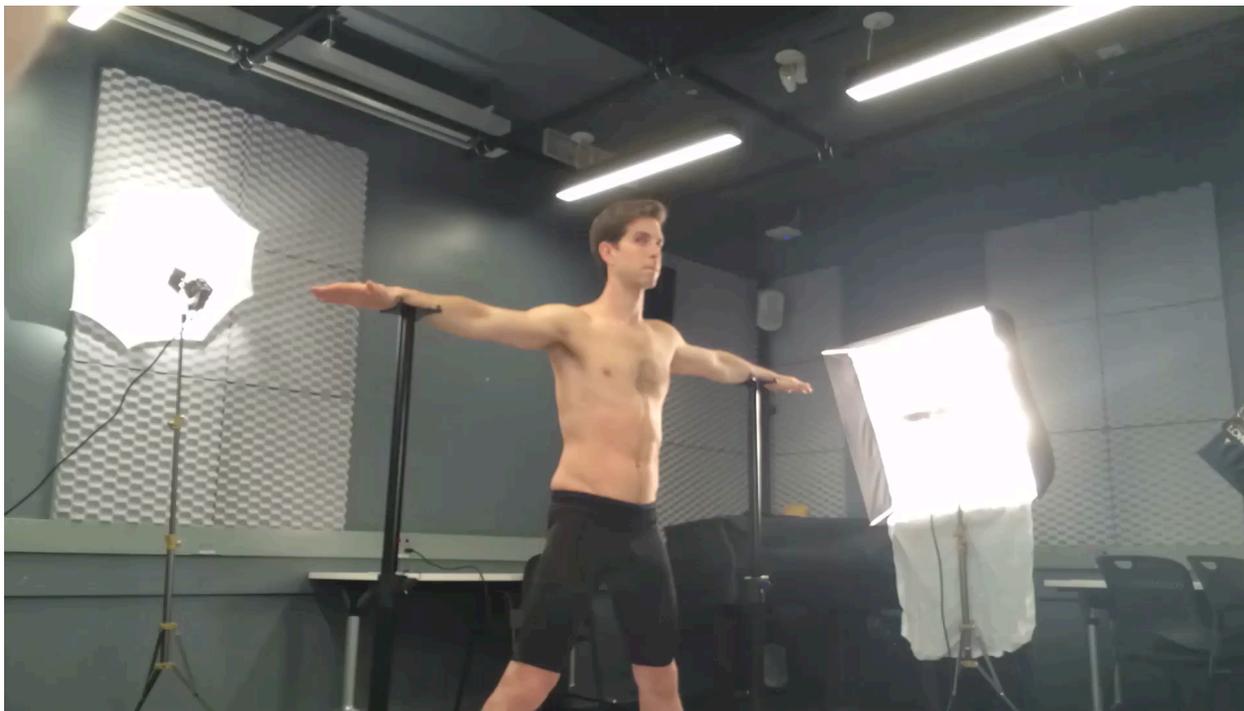


Journey to the Shaman, ritual performance





3D Scanning for character creation





Great Mesh, Not So Great Skin Texture

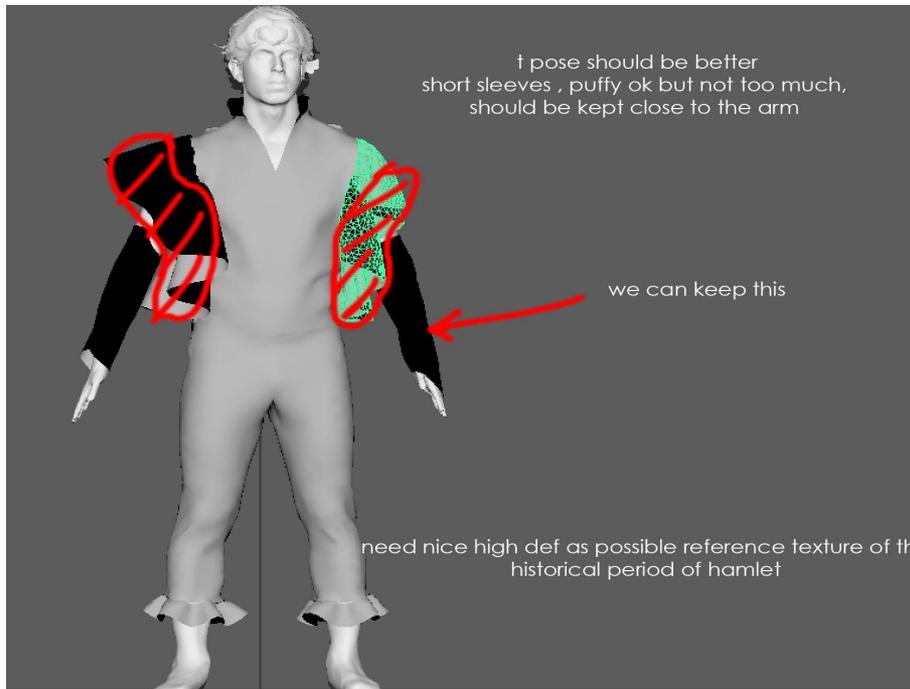




Photogrammetry For Texture



3D Clothing



Lesson learned....

Make it simple, stylish
and functional



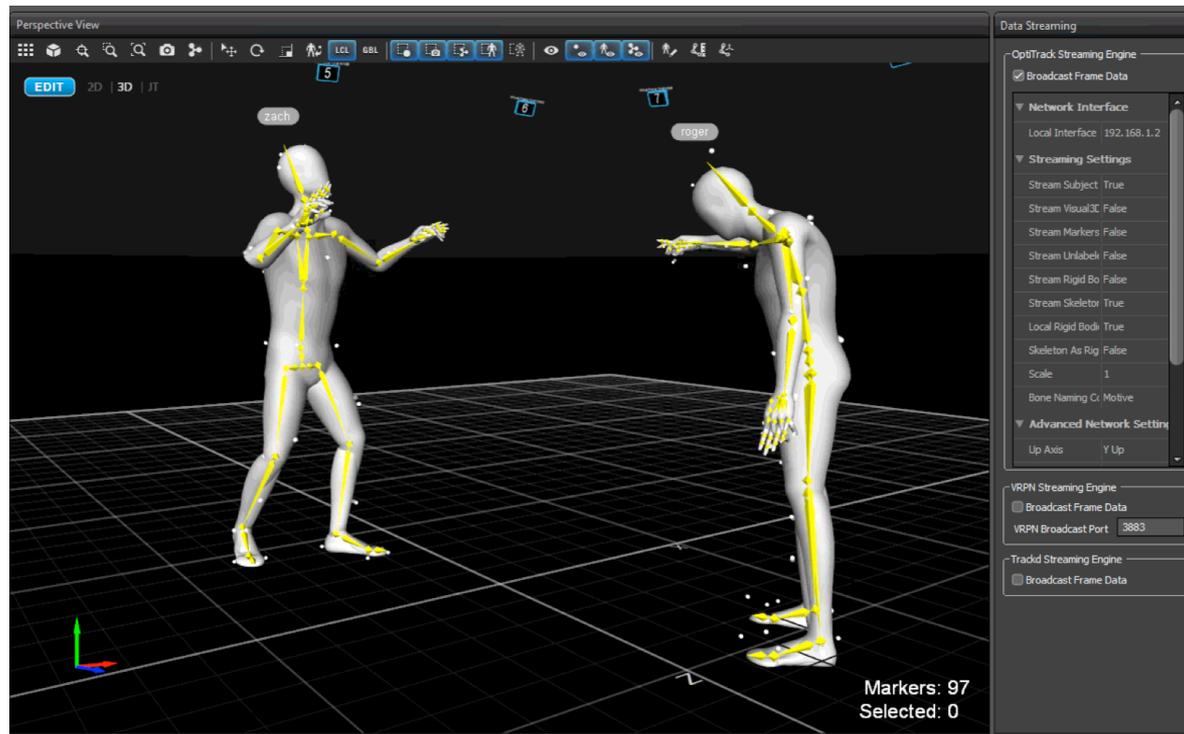
Real-time Performance Capture

Optitrack Motion Capture System

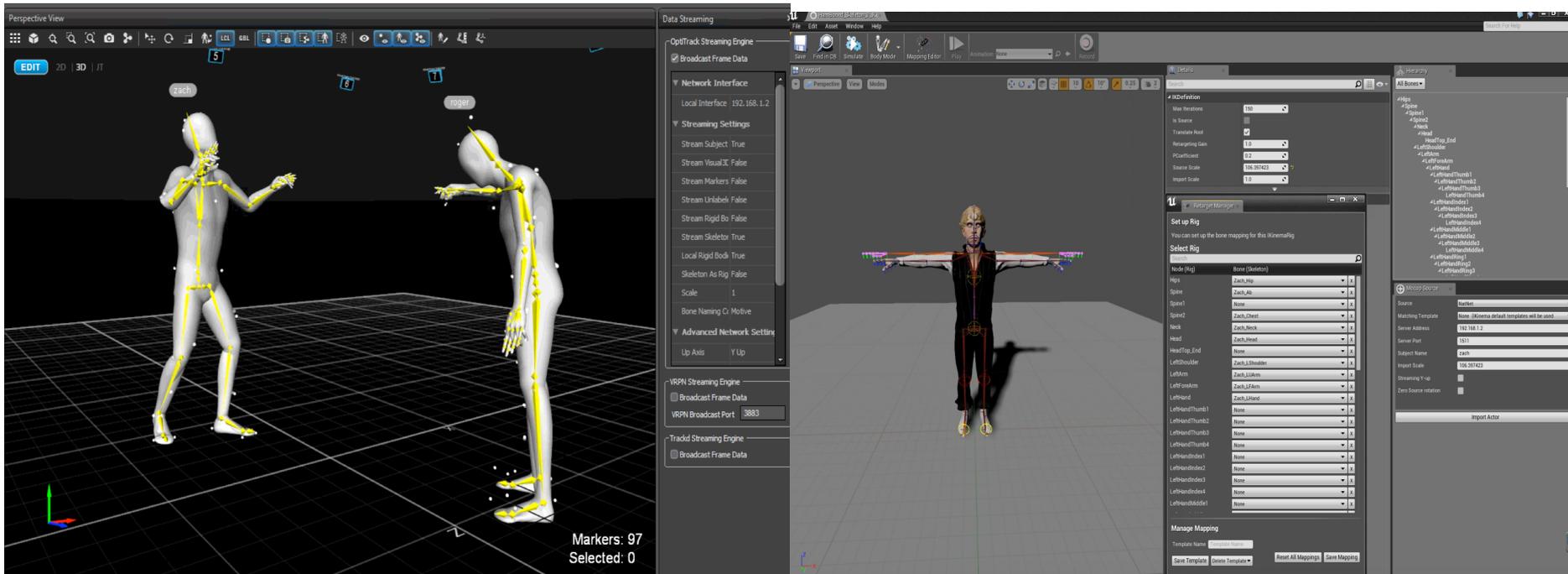
16 cameras set up at NYU
School of Engineering

49 markers configuration
for full body tracking

18' x 18' stage area



Ikinema Live Retargeting Tool





The screenshot displays the Unreal Engine 4 interface. On the left, a 3D viewport shows a character with blonde hair and a black vest standing on a checkered floor. The right side of the interface features the Animation Blueprint editor, showing a graph with nodes like 'OptiTrack Stream', 'Retargeting using iKinema rig', and 'Final Animation Pose'. The bottom of the interface includes the Asset Browser, Details panel, and Anim Preview Editor.



m3diate

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virtual reality collaboration platform

Core Features

MVP Features:

- **Real-time Multi-person Networking:** real-time networked voice chat and real-time networked multi-user motion tracking
- **Positional Audio:** 3D positional voice chat, realistic room reverberation and sound synthesis
- **Collaboration Tools:** collaborative 3D drawing, shared web browsers, etc...

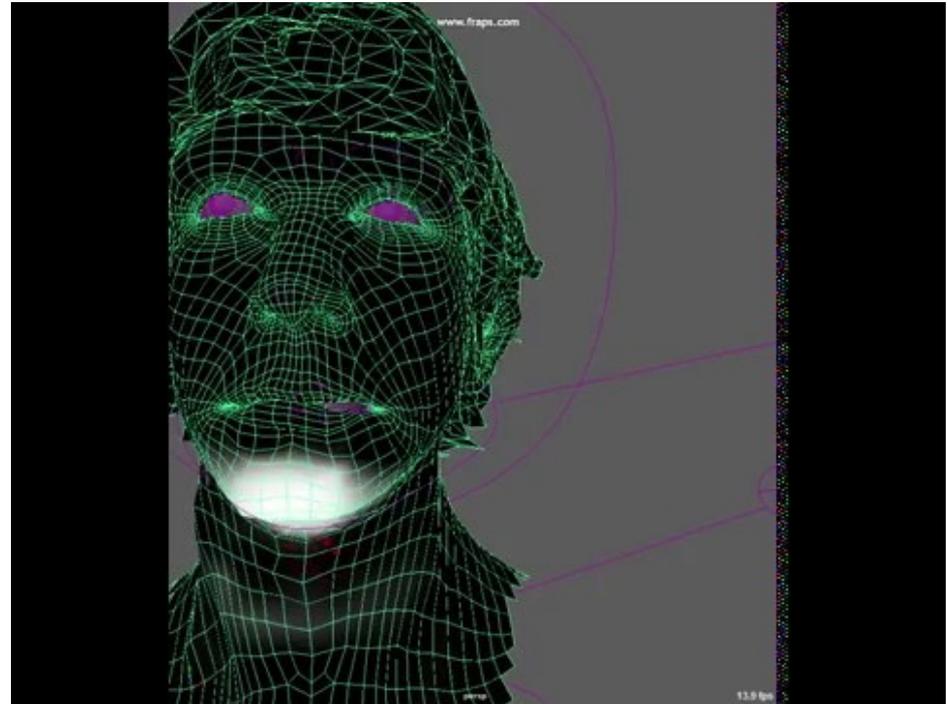
Audio

- Essential for establishing space using ambient sound fx
- Live sound from actors is spatialized in M3diate clients
- Use headset mics very close to mouth to avoid bleeding
- Audio latency matches mocap latency (0.5 s)



Facial Capture

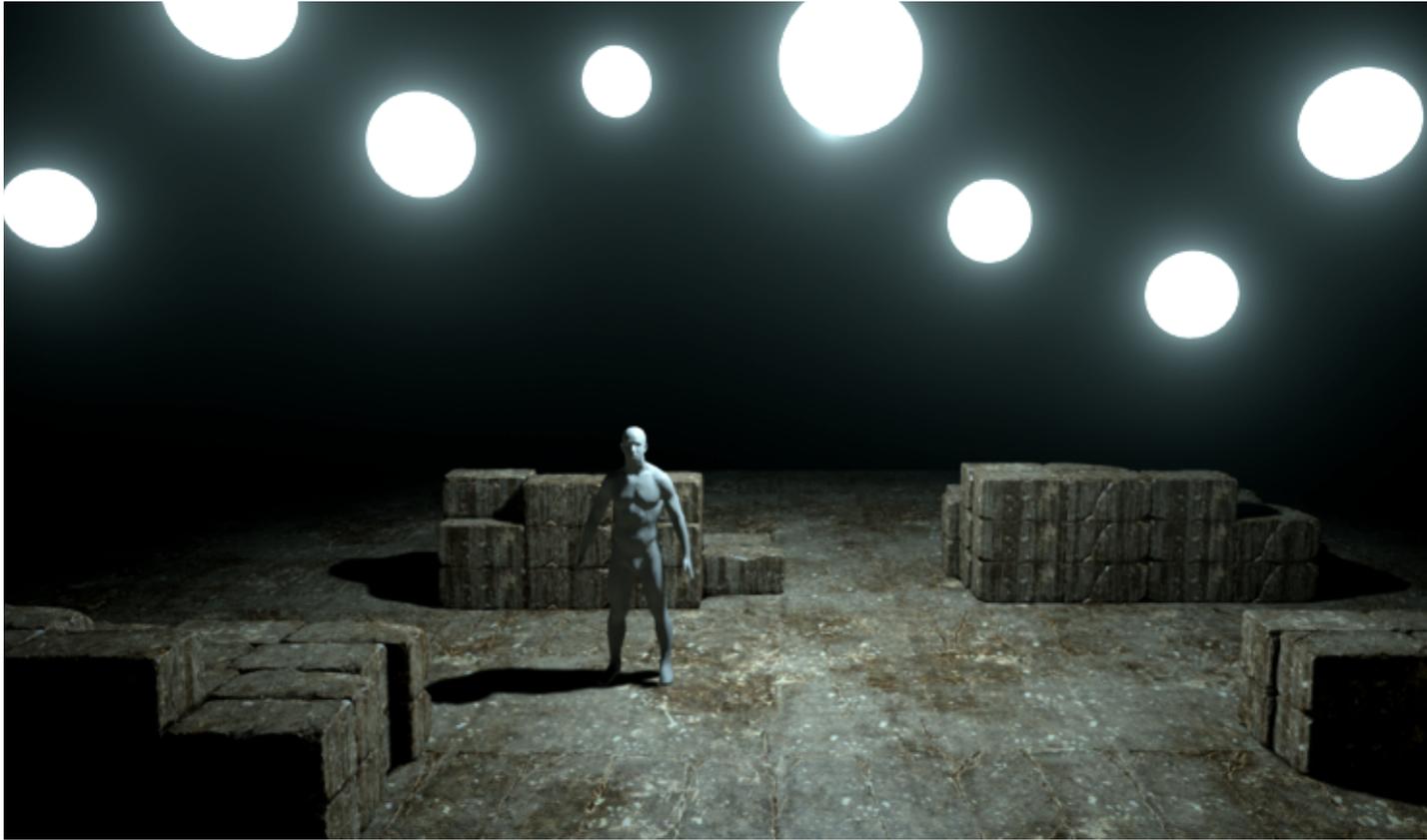
- Using Faceware
- Video camera captures movement
- Applies deformations to specially prepared model



Design Decisions

World Design

- Help tell the story
- Support immersion
- Illuminate themes





The Ghost

- Wears armor
- Otherworldly and strange
- Oversized role in Hamlet's psyche
- Scale works great in VR



Performance Style

- Acting for mocap: movement oriented
- Acting styles to support presence in VR
- Directing for VR within VR
- Blocking: use space fully



Some Observations

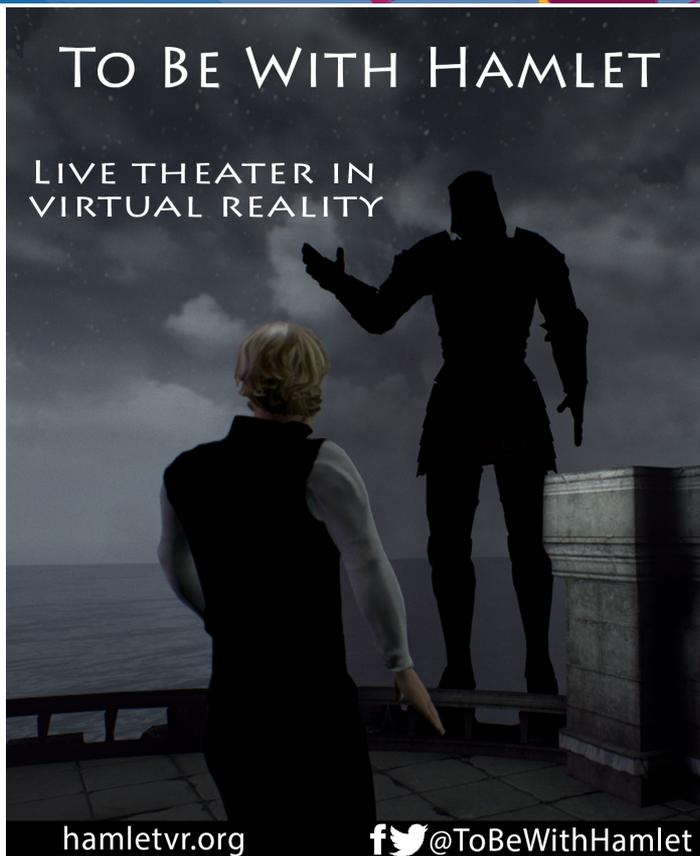
- Full freedom to explore means some viewers wander away and ignore the performance.
 - ➔ Allow time to explore
 - ➔ Build more story into the set
 - ➔ More cues to guide the audience back to the action.
- Telepresence belies presence because everyone is immaterial. For the ghost that's ok, for Hamlet, a little less so.



What Next?

- Live show control: transitions between live actors on set, and prerecorded animations for entrances/exits
- Feedback between audience and actor (actors can't see audience now)
- Facial Capture (working on it)
- More usable spaces in world, for other scenes
- Stage a full story arc that illuminates Hamlet's relationship to religion, the afterlife, and the supernatural.
- Apply what we've learned to other kinds of VR storytelling

THANK YOU!



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