



Accessibility in VR

We can do better



Introductions!

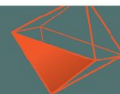
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Why are we here?

Roomscale hand-tracked VR uses the human body has a huge part of the experience. It's crucial to identify:

- How your design interfaces with bodies and
- Which bodies have access to your experience





Why are we here?

VR is still in its early days.

So it's important to set standards of considerations now as we are still developing the design language for the medium.





Why are we here?

That said, this talk is not to dictate what games you can make. There is enough space in VR for all sorts of games! But it's important to keep all this in mind so that you are making decisions, not just accidentally excluding individuals.





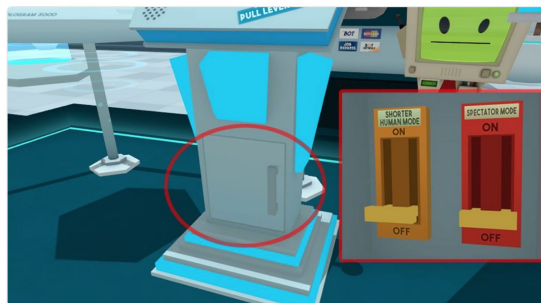
Why are we (us) here (on stage)?



Following

Job Simulator now has 'Smaller Human Mode' for humans unable to reach high areas in-game!

steamcommunity.com/games/448280/a...



1:57 PM - 3 May 2016

- Job Simulator aimed to be as accessible as possible
 - Reduction of abstractions
 - Understandable to a wide range of humans
 - Shorter human mode/standing room only





Why are we (us) here (on stage)?

- We discovered later that we missed important aspects
 - Grape Juice bottle (Gourmet Chef)
 - Floor-level items uncomfortable to grab
 - Resulted in the hover feature in Rick and Morty: VR





Why are we (us) here (on stage)?

- Rick and Morty: Virtual Rick-ality



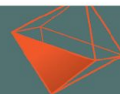
- Based on the VO of Justin Roiland
- Resource intensive to prototype subtitle system that conveyed tone and intent
- Still wish we had been able to find a solution





How do you data? (What we surveyed)

- Wanted to make sure we covered a lot of breadth
- 82 games surveyed
- Across four platforms
 - HTC Vive
 - Oculus Rift + Touch
 - PlayStation VR with DualShock and Motion Controls
 - Google Daydream





How do you data? (How we surveyed)

- Criteria focused on key discrete items
 - Attempted play standing and sitting
 - Availability of options (and what they offered)
 - Reliance on audio
 - How much bending/reaching was required





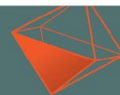
How do you data? (Revelation of biases)

- We are VR game developers
 - We are intrinsically optimistic and believe in VR as a medium
 - We also have a lot of opinions about how to do VR right
 - (Sorry, not sorry)
- We are more able-bodied than many other humans
 - Previous experience with mobility issues
 - Some vision impairments, but easily overcome





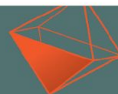
Visual





Visual - Data

- Headsets are bad with glasses
 - The current solution is a band aid overall
 - Still, the only experiment to assist with vision impairments
- If you want Rx Lenses you have to buy them from a third party
- Software devs can't do much about this. We are at the mercy of the hardware manufacturers





Visual - Case Study: Oculus DK1



- Oculus DK1 came with interchangeable lenses
 - Didn't quite work, ultimately abandoned in later models
 - Still, the only experiment to assist with vision impairments





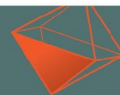
Visual - Case Study: Oculus DK1

- Current generation headsets try to be large enough to encompass glasses
 - Only somewhat successful
 - Too narrow for many popular frames
 - Often requires the lenses sit too close to the glasses
 - PlayStation VR widely accepted as the most comfortable





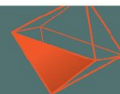
Physical





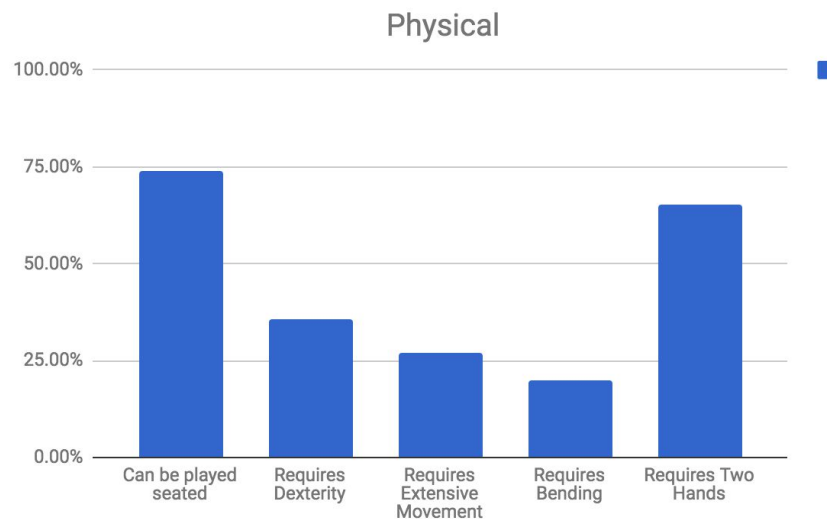
Physical - Data

- Remember some people have issues standing
- Some people have difficulty bending
- Those who are seated cannot always rotate
- What we attempted
 - Playing seated
 - Playing standing noting how much reaching is required
 - Playing standing noting how much bending is required





Physical - Data





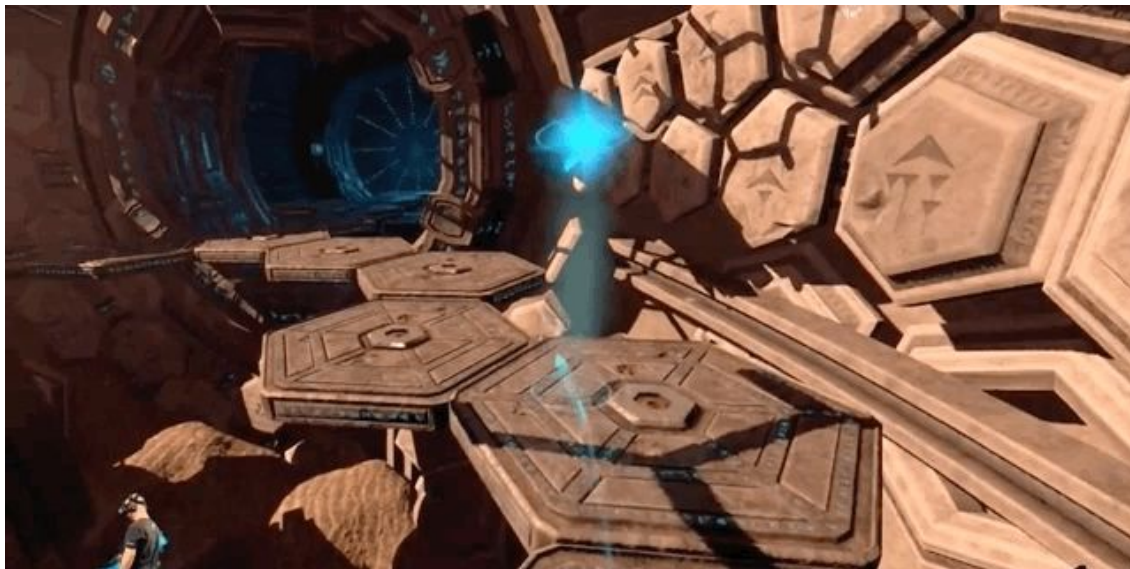
Physical - Case Study: Emberstone

- Provided multiple options for customizing inputs
 - Requires two hands, but provides options for handedness
 - Reach assist/force grab
- Mobility was not required for play
 - Granular teleportation
 - Includes rotation
 - Could be played seated
 - Option available to move with joystick





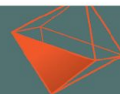
Physical - Case Study: Emberstone





Physical - Case Study: Headmaster

- The design afforded not bending at all
 - Head motion needed as part of core design mechanic
- Can be played seated or standing
- Can be set up entirely one-handed
 - Gameplay requires no hands at all
 - Menu selections gaze-based





Physical - Case Study: Headmaster





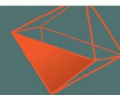
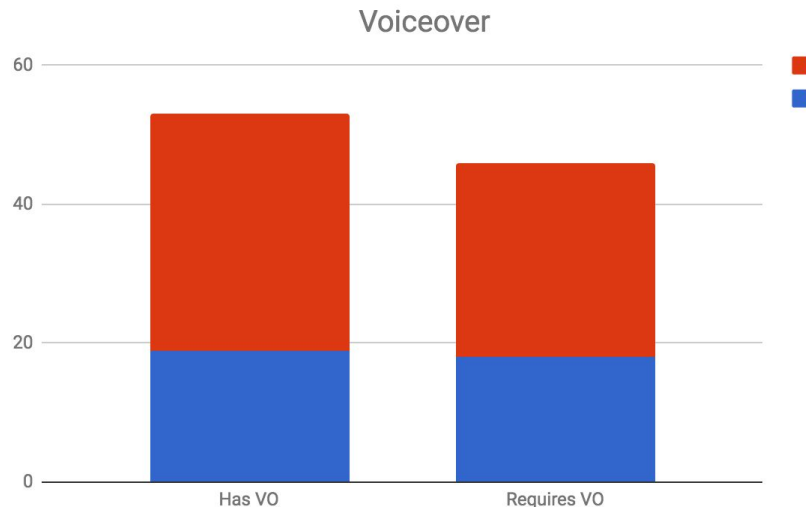
Auditory





Auditory - Data

- 65% of games tested had VO
- 46% have VO essential to playing the game
 - This is the vast majority of games with any VO at all





Auditory - Data



•Types of Subtitles

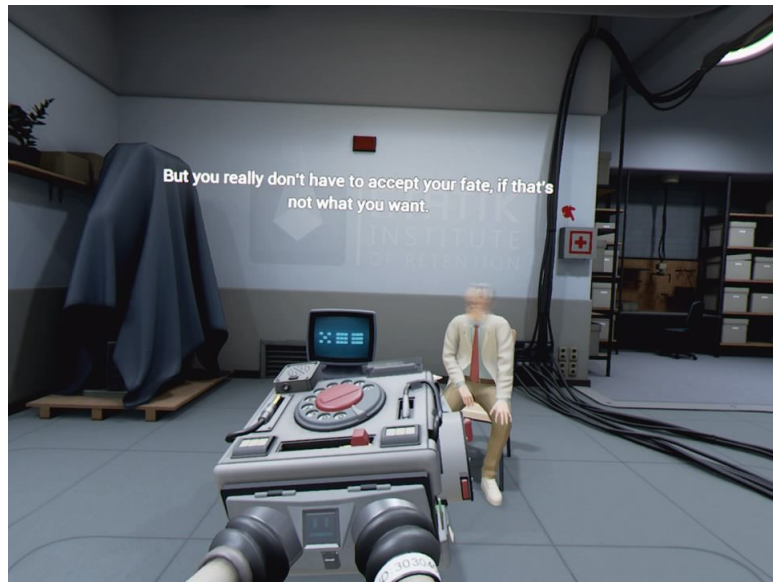
- Glued to face
- Glued to face (no vertical motion)
- Glued to player
- In world





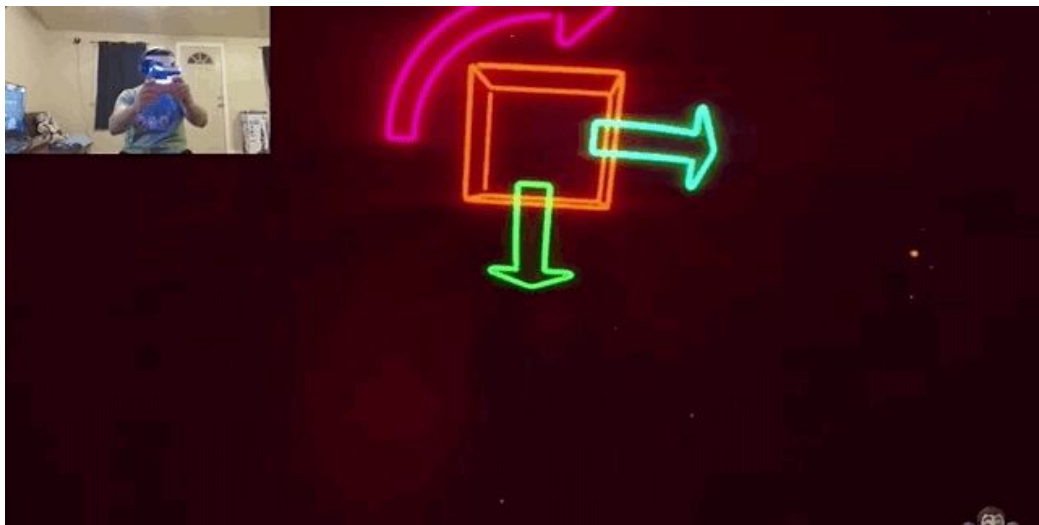
Auditory - Case Study: Statik

- Subtitles option available
 - Shown in world
 - Over the speaker / audio source

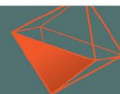




Auditory - Case Study: Super Hypercube



- No VO at all
- Instructions are given entirely visually





Auditory - ASL

- Is a highly dynamic and expressive language
 - Has its own grammar and structure
 - Doesn't easily Google translate
 - Has its own culture! (This means different forms of expression.)
 - (And also types of jokes!)





Auditory - ASL

- Moss! (have to mention it)
 - Includes ASL elements for the character to communicate with the player.
 - Deftly handled





Tip of the Hat: Fantastic Contraption!

- Northway Games and Radial Games ROCKED accessibility
 - Thoughtful subtitles, tooltips written out
 - One-handed play available
 - Tabletop mode





Development Tips

- Bending
 - If you don't want to force grab you can use hovering!
- Audio
 - More work with speech bubbles!





Final Thoughts

- Overall we are a long way from figuring out how to “solve” all our accessibility issues.
 - As always, prototype everything!
 - We need everyone’s help to brain this with us
- VR has space for every type of game
 - But it’s easy to unintentionally exclude humans without meaning to
 - Conscious and mindful consideration can help us avoid this
- We are creating the language of VR development now!





Thanks!

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