Gestures vs controllers

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So, I tried the gesture control demo (First hand), and I still didn't like it. That prompted me to do a little experiment and have some colleagues try the demo, as well as do some interactions with the controllers in our VR playground level.

The results show that, while experienced players prefer the controllers, people without VR experience prefer gestures. The "They don't know the controllers but they do know their own hands" argument is valid.

However, out of the 4 unexperienced participants, 2 were unable to complete the gesture demo because they could not get the teleport gesture to work. So, the experiment also showed that there are issues with gestures that need to be addressed. I've summarized them below, but I also have more detailed notes of the experiment that I can send as well if anybody is interested.

Issues with gestures:

Grabbing, buttons, levers, UI

- Grabbing and pressing buttons generally worked fine. In-game actions that resemble real world actions are intuitive and the headset registered the gestures pretty well.
- It is nice to have the ability to grab using either a pinching gesture or a closed fist. People tended to grab smaller objects with a pinch.
- Some buttons needed multiple attempts because people either pressed 'through' the buttons, or didn't press them far enough. Since buttons aren't diegetic, people have no sense of scale / depth. However, this didn't seem to really frustrate any of the participants since they would just instantly retry to press.
- Some participants tried to press larger buttons with more than one finger extended. It would be nice if that worked as well.

Teleporting and snap-turning

- This is the one that caused the most problems. These definitely need to be addressed if we want to use this in the game.
- Often times when you try to teleport with one hand, it will still recognize the other hand as trying to teleport and not show a line (I have also managed to get 2 teleport lines to appear at the same time so I don't know why this even happens, but I do notice it).
- Sometimes moving your index finger and thumb to pinch to execute the teleport or snap turn actually exits the initial teleport / turn state, since you are no longer doing the pointing gesture.
- Sometimes, when you try to touch index finger and thumb, it doesn't get recognized because it happens behind the palm of your hand. Turning your hand doesn't work since that would trigger the snap turn gesture.
- For the snap turning: It can be difficult to see which way you will turn to, and this also has the tendency to switch directions last second, which can be very disorienting. I noticed that many people did not use this at all, and instead opted to just physically turn around.
- Oculus menu sometimes pops up.

General remarks:

- There seems to be too much nuance to the way that the gestures have to be executed. Pinching with the palm down can be used to grab, while pinching with the palm to the side is teleporting and with the palm up is snap turning, or opening the oculus menu. While it is nice to distinguish a variety of inputs, this seems too difficult to explain to a beginner.
- If we do not use controllers, we also miss out on the virtual controller models and the labels. We need to figure out a way to show what each gesture means in case that the players forget.
  In the tutorial, this was done by ghost hands showing exactly what to do at which point, but this cannot be done in our game, since it is less linear. We don't know if the player is trying to teleport or report a risky situation. The players need to be able to see the full control scheme. This is not impossible or anything, but it is something that we need to make.
- We also still need a gesture / method to report risks. This was present in the controller demo, but not in the hands demo of course.
- More abstract gestures, such as teleporting and turning require more instructions and practice than realistic / intuitive gestures such as grabbing and pressing buttons.

Potential solutions:

- Have controllers be optional for people who prefer them. This would be nice, but also requires more work to make.
- Change gestures for teleporting / snap turning.
    - We could also dedicate one hand to turning and one to teleporting?

Conclusion:

I am now convinced that gestures are the way to go for this game. Although controllers work smoother and more reliably, they have a longer learning curve. Since we do not have the time to familiarize every player with the controllers in a single playthrough, we should opt for the option that comes most natural to the players. However, there are issues that need to be addressed, which are summarized above. But none of these issues seem unsolvable. I am confident that we can make a proper interaction system based on gestures for our game.