REACTIONS TO IMMERSIVE VIRTUAL REALITY EXPERIENCES ACROSS GENERATIONS X, Y, AND Z

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ZBIGNIEW BOHDANOWICZ

I am an economist and a psychologist, I work at the Institute of Interactive Technologies at OPI PIB. At OPI PIB, I study what is happening at the junction of modern technologies and people. I study how people perceive virtual reality and the potential of this technology, but also the threats. I also work on a project related to the creation of innovative technologies to facilitate the energy transformation towards lower greenhouse gas emissions. In this project I assess how new technological solutions affect people's lives and how people perceive them.

I am also involved in climate education at the University of Warsaw and I am co-author of an academic textbook on climate change. I strive to disseminate scientifically proven knowledge about the state of the environment, the climate and the resulting prospects for the future.

WHY DID WE STUDY THE IMMERSIVE VIRTUAL REALITY?

▶ level of technology vs. awareness of it

▶ IVR development potential

▶ barely known area
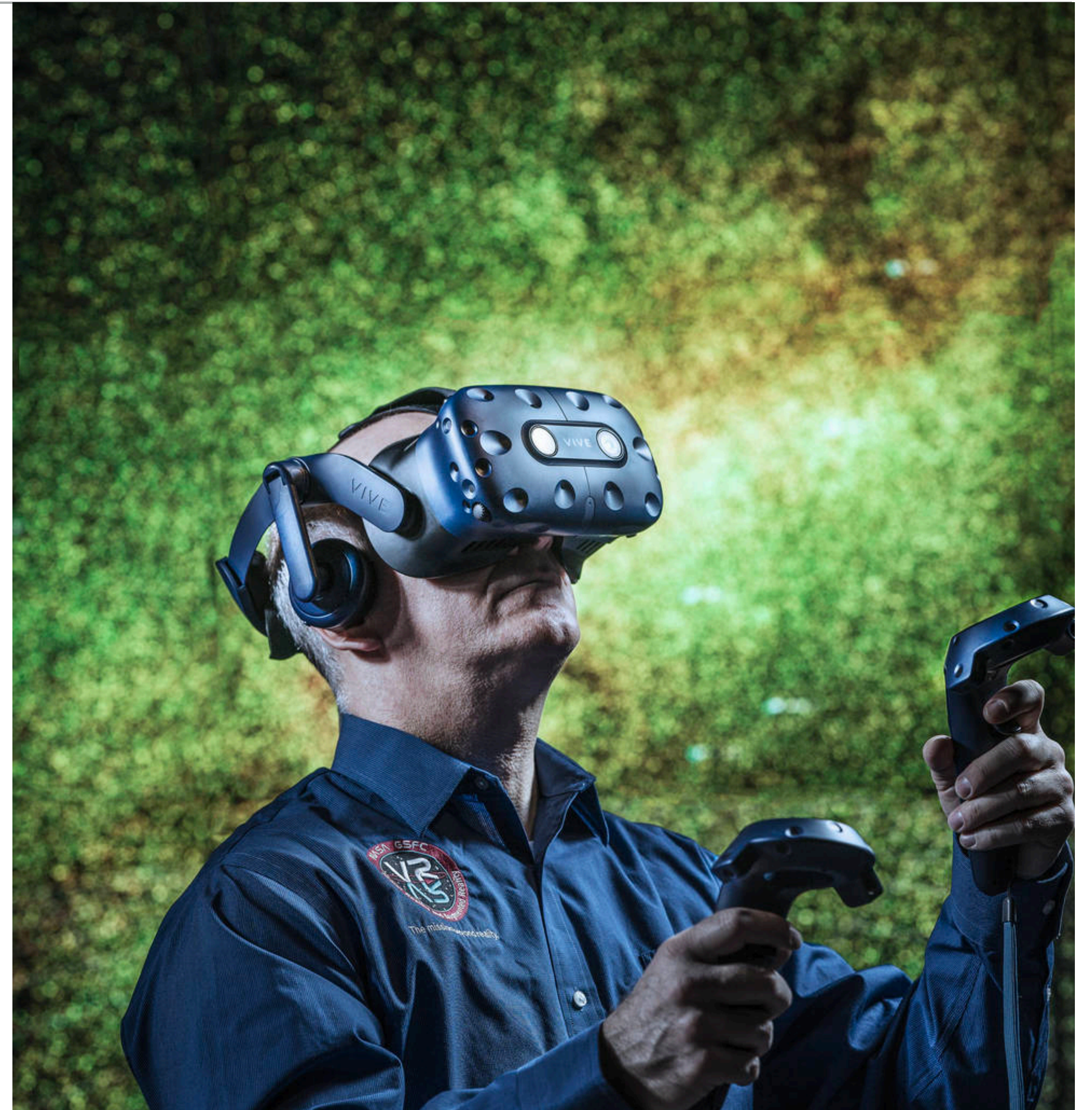
THE METHODOLOGY

- Qualitative interviews, about 60 minutes

- 18 adults, aged:
  - 20-25 years (generation Z)
  - 35-40 years old (generation Y)
  - 50-55 years (generation X)
- 8 children aged 7-12 years
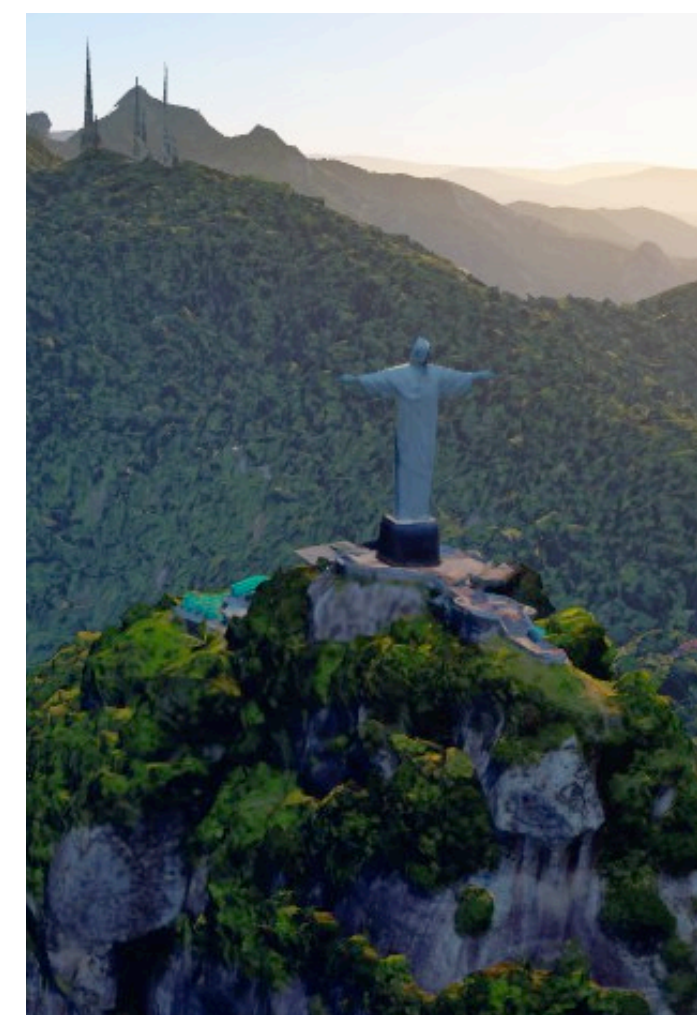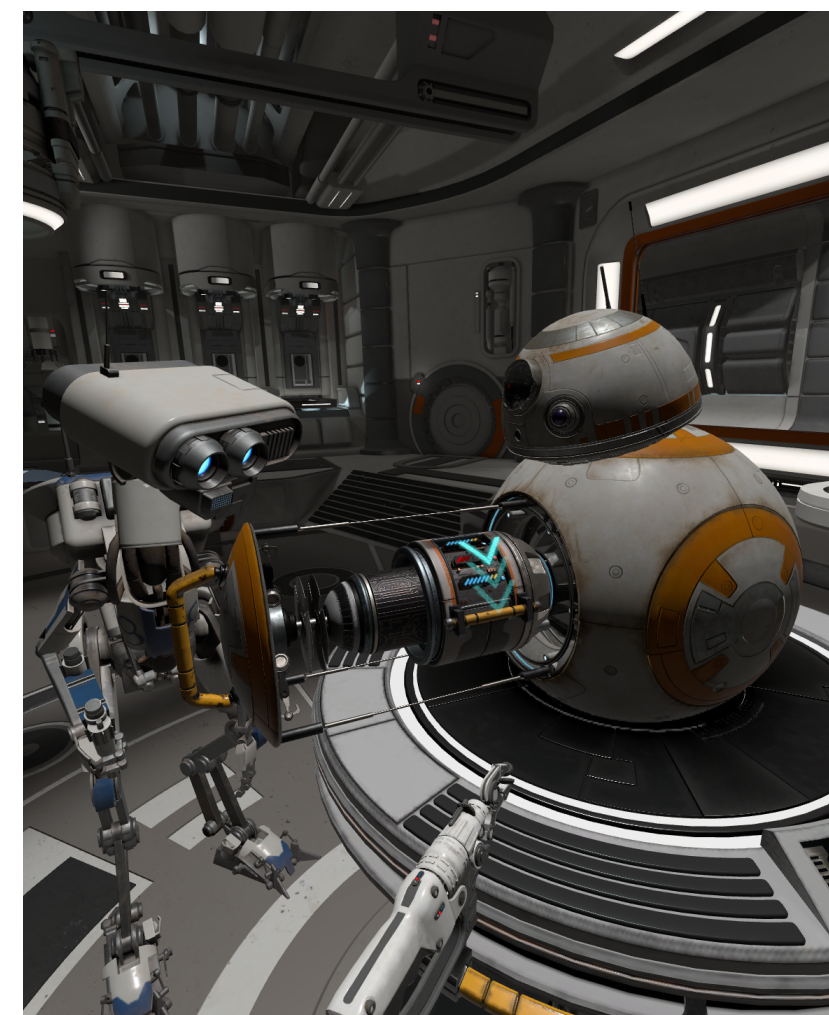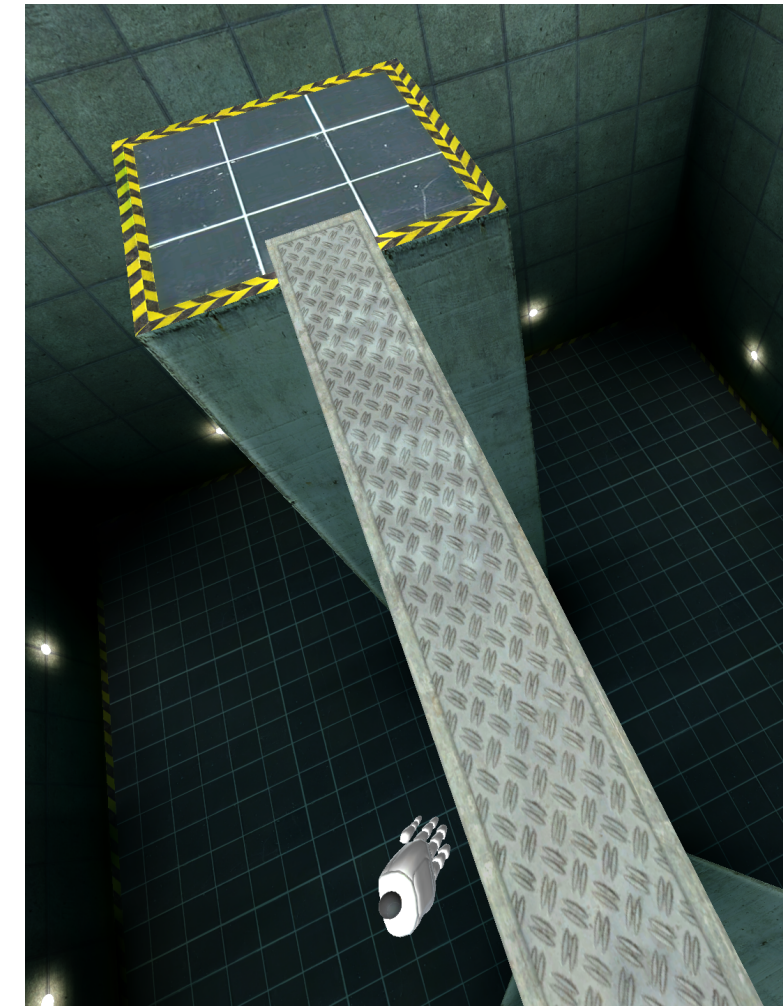
- HTC Vive Pro
- July 2019

CONTACT WITH TECHNOLOGY AT DIFFERENT STAGES OF LIFE

generations vs. contact with technology during childhood	Baby Boomers 1946 - 1964	Generation X 1965 - 1980	Generation Y (Millennials) 1981 - 1996	Generation Z 1997 - 2012
TV since 1950-60 in USA, since 1960-70 in Poland	**YES**	**YES**	**YES**	**YES**
Personal computer (1995 - Windows 95)	-	-	**YES**	**YES**
Internet (1995 - commercial use of the Internet in the USA)	-	-	**YES**	**YES**
Smartphone (2007 - iPhone 2G)	-	-	-	**YES**

SOFTWARE

- *360° video*
- *Dreams of Dali*
- *Apartment*
- *Walk the Plank*
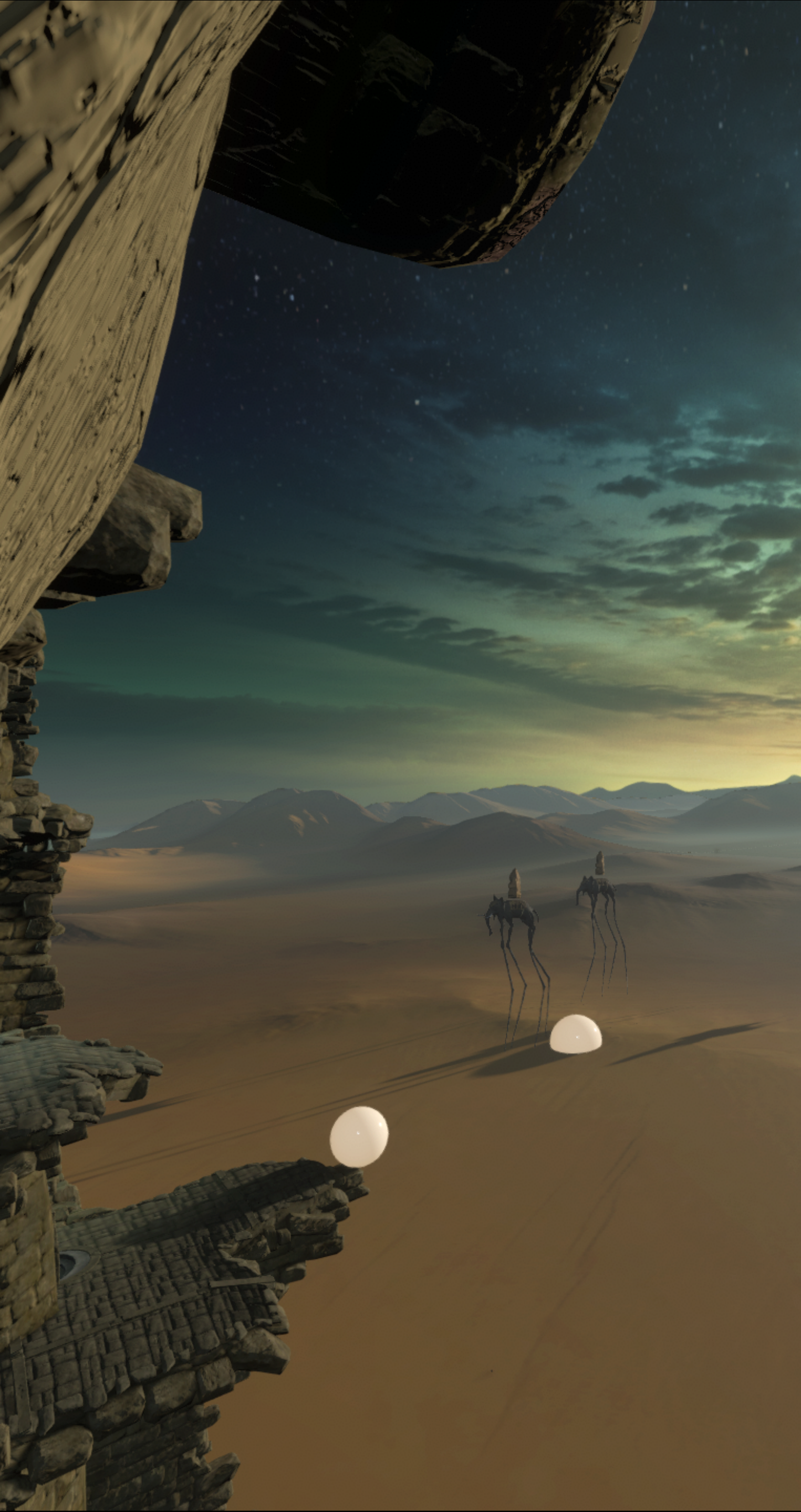- *Droid Repair Bay*
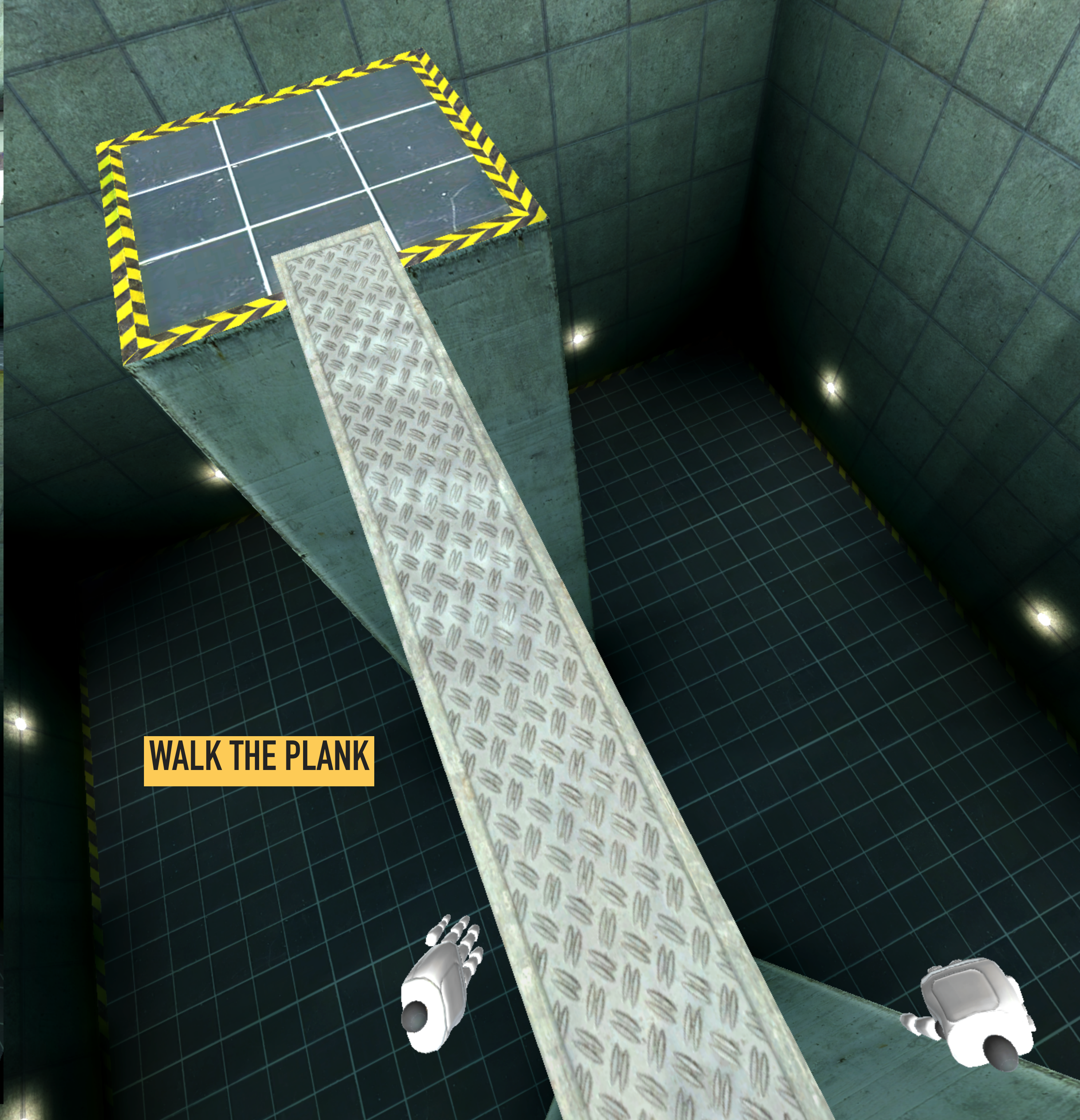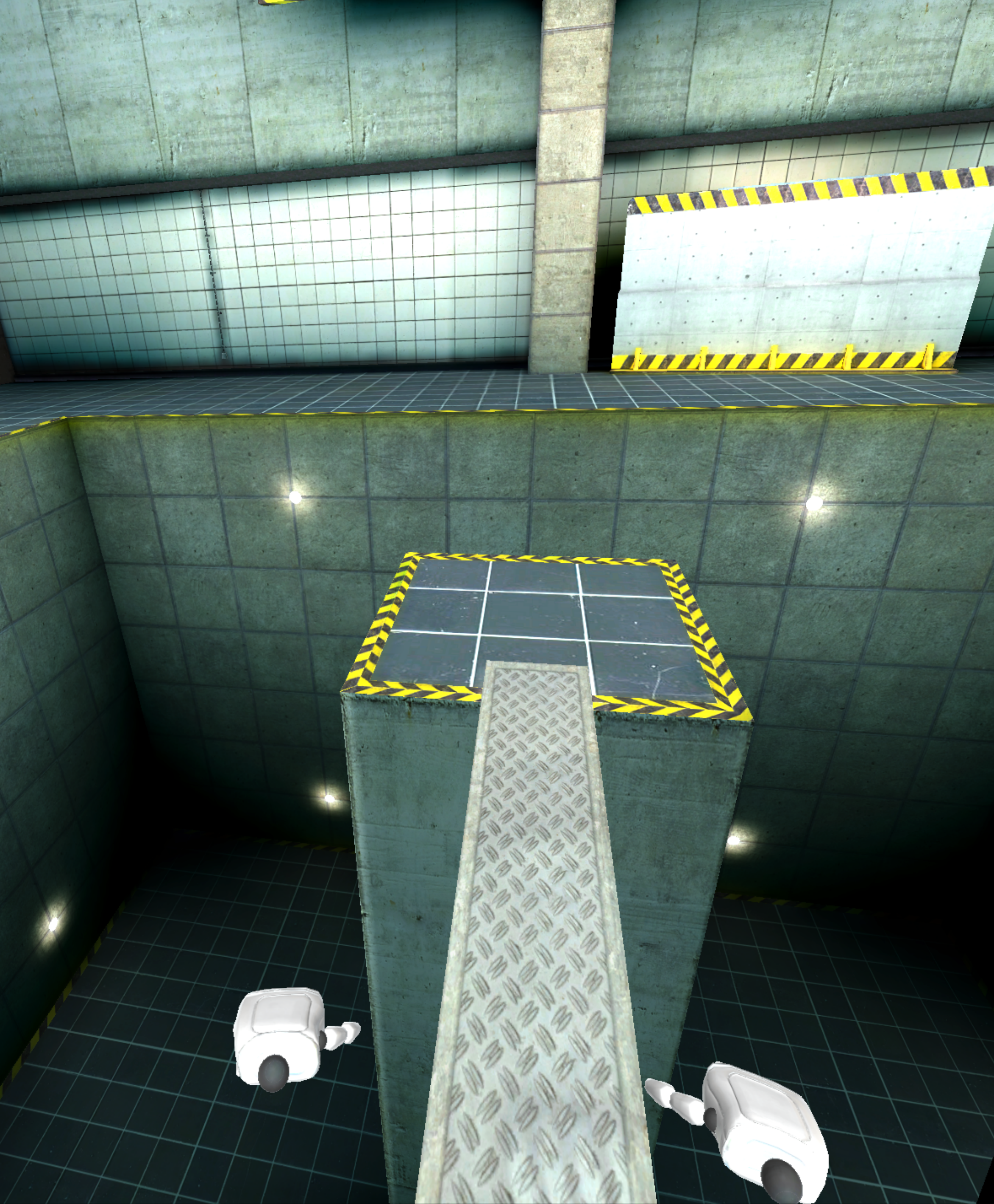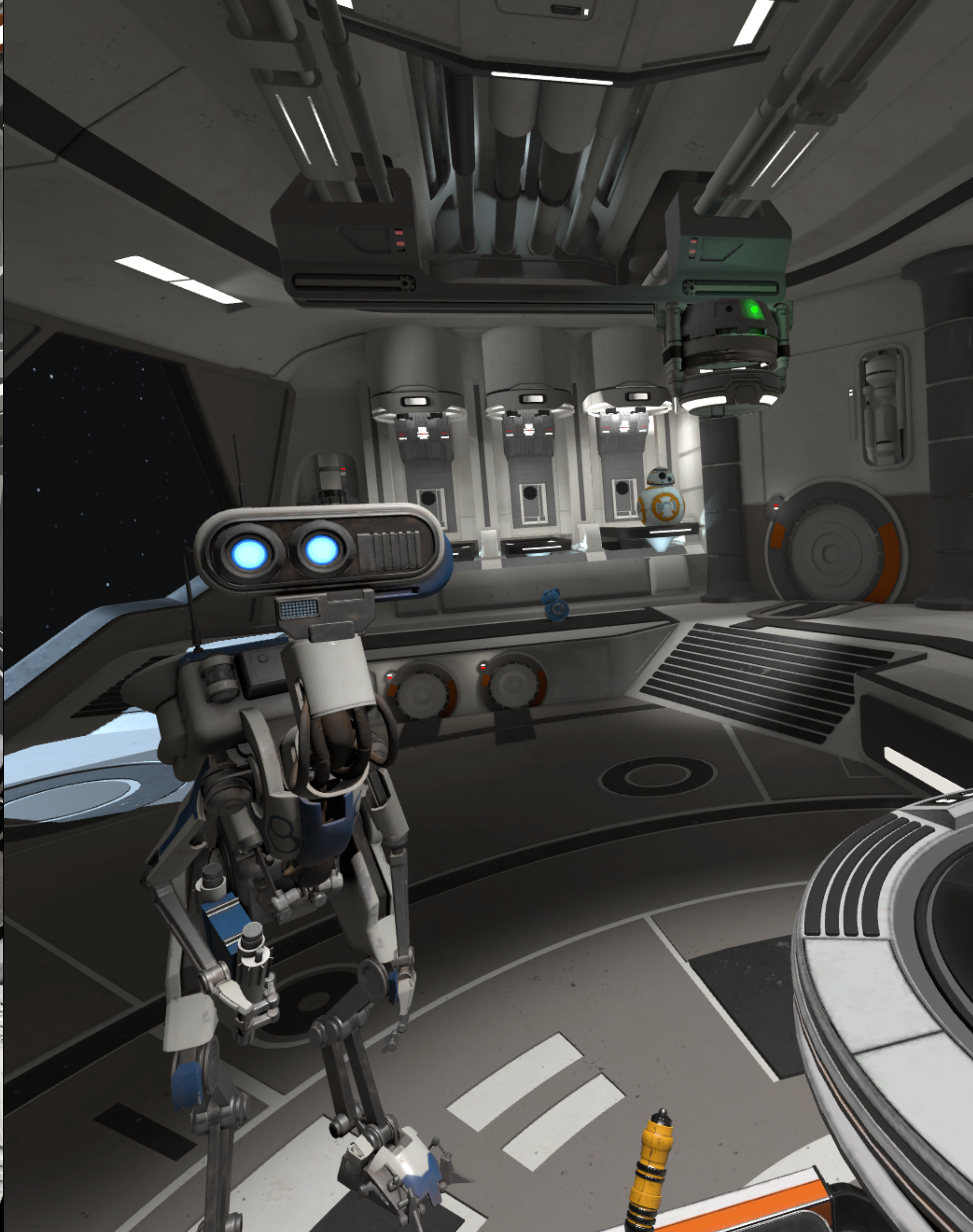- *Google Earth*
- *The VR Museum of Fine Art*

360 VIDEO

WALK THE PLANK

GOOGLE EARTH

Vatican City
Rome, Italy

Hold to save

院

BUDDHA

U-IN

URA

Anavysos Kouros

Unknown, c.590-580 BCE, ma
Metropolitan Museum of Art

This noble figure of a youth is o
freestanding marble statues from
Athens. It is a type of sculpture k
youth), characteristically depicte
striding forward and hands clenc
kouroi were made in the Archaic
seventh and early fifth centuries
have served as grave markers or a
sanctuary of a god.

The Greeks learned to quarry sto
execution of large-scale statues fro
had been working very hard stone
of the kouros, a clear and simple fo
Egyptian art and was used by Gree
a hundred years. From the very be
Greeks depicted their male figures
Egyptians were normally skirted.
evenly distributed the weight of th
act of walking, eliminating the rec
that is found on the back of Egypti
Greek kouros looks stiff and unnat
exemplifies two important aspects
interest in lifelike vitality and a co

[metmuseum.org]

高徳院

THE GREAT BUDDHA AT

KOTOKU-IN

IN

KAMAKURA
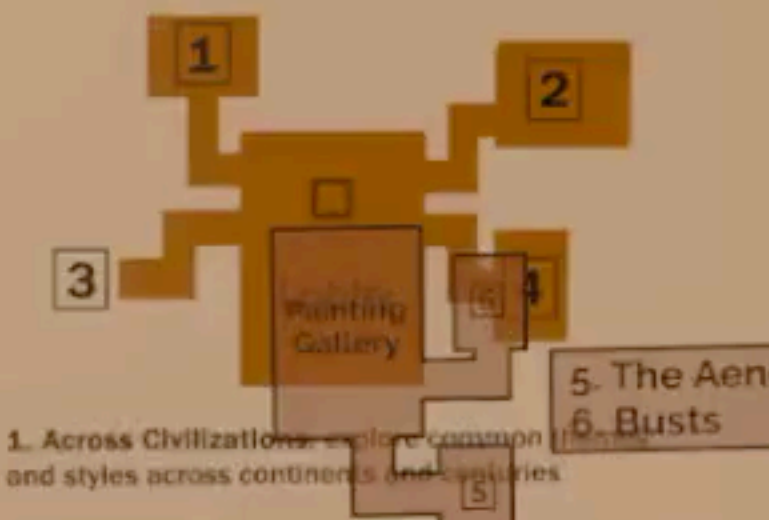
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welcome to the

VR MUSEUM
of
FINE ART

- a handy map,
- extra information,
- and fun pictures

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map

Lose yourself in the artwork!
But don't get lost.

Painting Gallery

1. **Across Civilizations:** explore common [themes]
and styles across continents and centuries

2. **Qin Dynasty Terra Cotta Army:** see and learn
about the fearsome warriors that protected the Chi-
nese emperor Qin Shi Huang

3. **The Great Buddha of Kamakura:** appreciate

5. The Aeneid
6. Busts

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info

Artwork Directory:

Sculptures:
A'a, islander god figure [4]
Amenhotep III tomb statue [2]
Apollo and Daphne [1]
Augustus of Primaporta [1]
David (Michelangelo) [Lobby]
Doryphoros [Lobby]
Great Buddha of Kamakura [3]
Anavysos Kouros [Lobby]
Yaxchilan Lintel #25 [1]
Pieta (Unknown, Belgium) [4]
Pieta (Michelangelo) [4]
Reliquary of a Saint [4]
Shiva, Lord of Dance [3]
Coyolxauhqui Stone [Lobby]

Paintings:
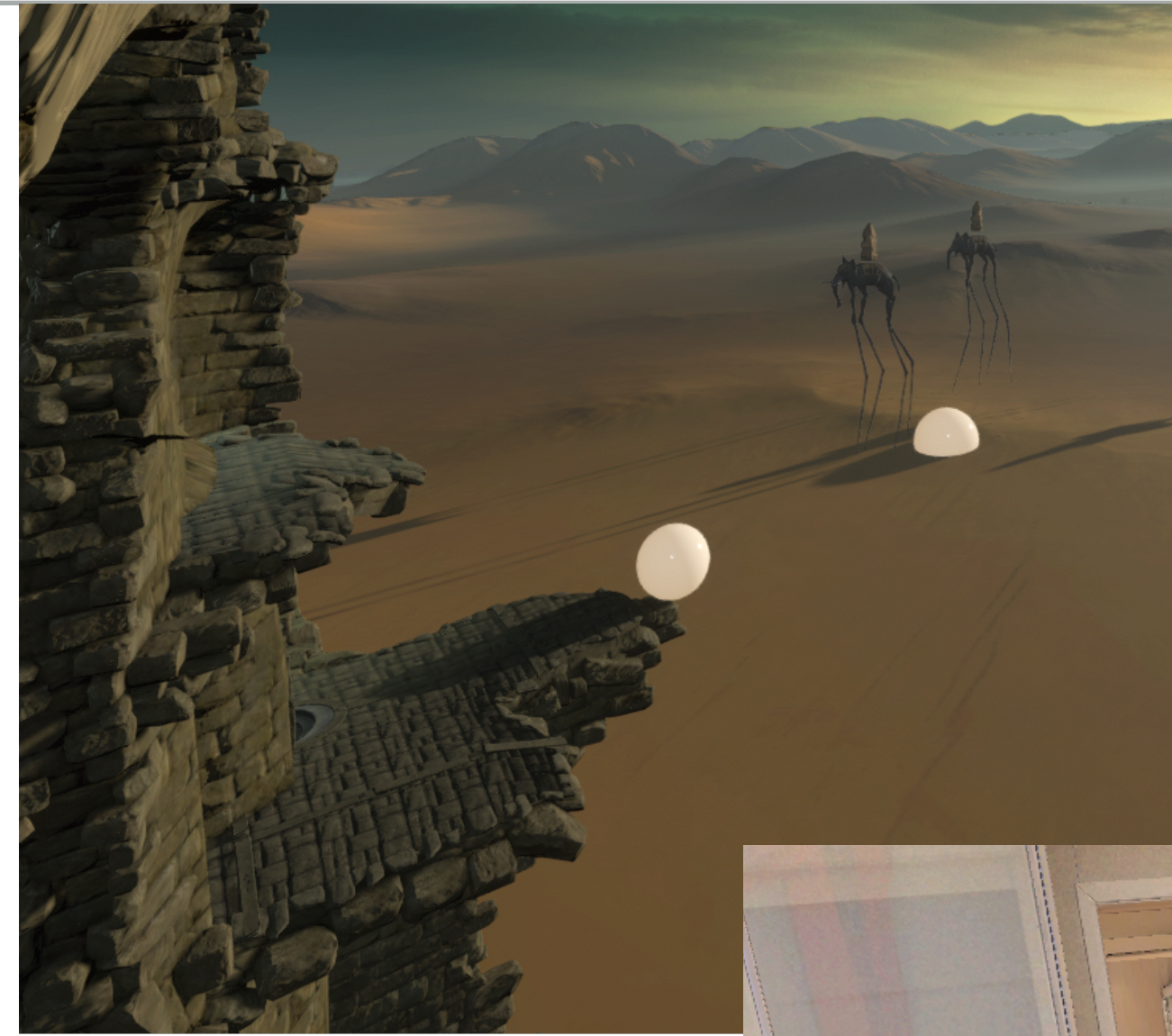The Birth of Venus [Lobby]
The Mona Lisa [Lobby]

WHAT HAVE WE LEARNT?

MOVEMENT

- Cybersickness

- Walking

- Teleportation with an indicator

- Teleportation - gaze pointer

- Cursors on the controller '*I had the impression that I was being pushed, as if in such a way ... quite brutal*' (K, 40)

ADAPTATION

- The young win:
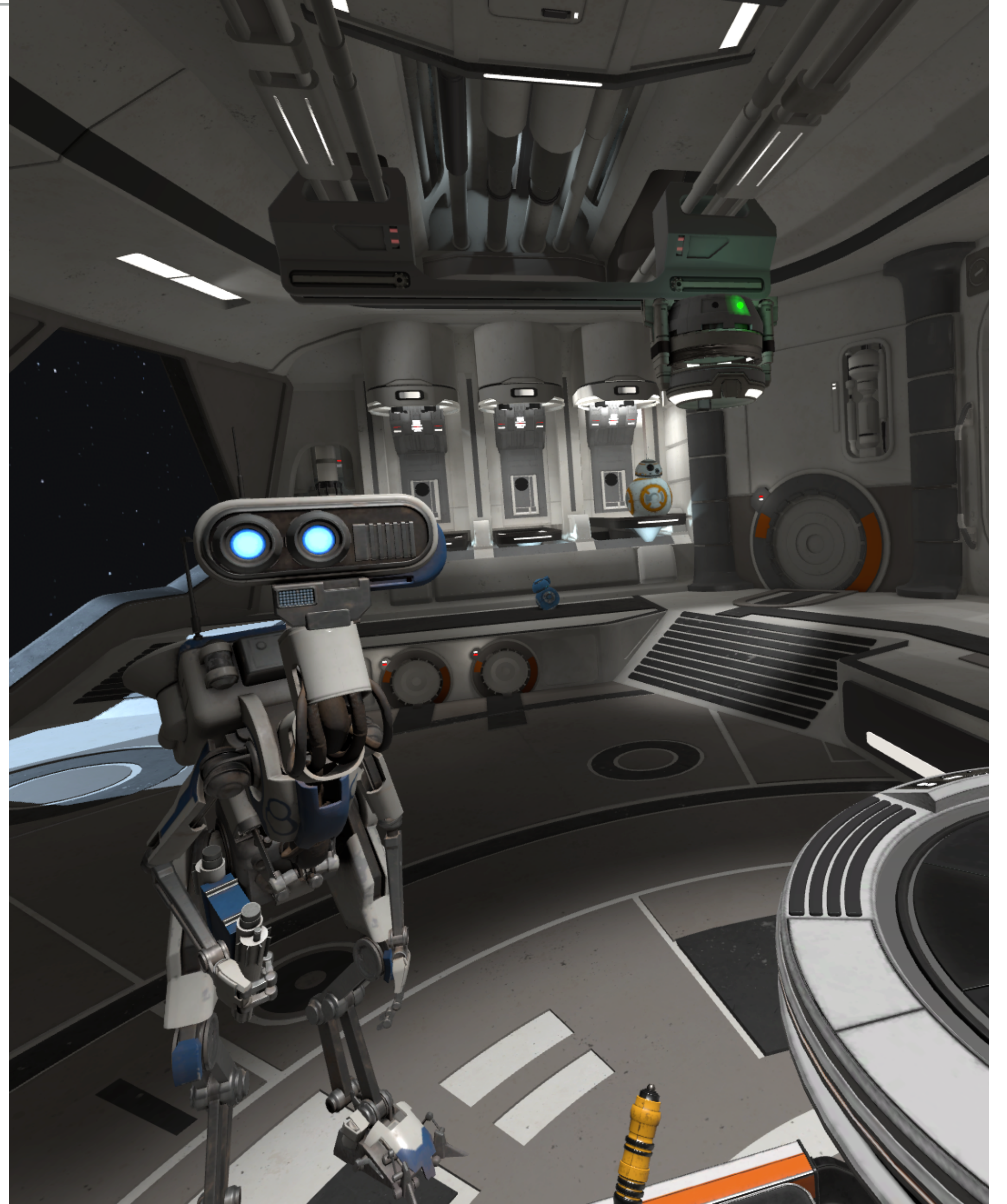 - Intensive exploration
  - They are not afraid to make mistakes
  - They learn to control very quickly
  - They do not need guidance
  - They adapt to cursor movement ('sliding')

PERFORMANCE OF TASKS

- The younger, the better!

SATISFACTION

- **Adults**

  - Gap between expectations and experience

  - Surprisingly easy interface

- **Children**

  - they love the digital world

GENERATIONS

- **Adults**

  - Breaking the limits of reality (money, distances, disability)

  - Travel and entertainment

  - Worse substitute for reality

- **Children**

  - Interactivity, exploration

  - A world without adults

  - Experience counts, no matter where

PRESENCE

- ## Immersion

It was incredibly well developed and so... I think somebody focused on making sure that the person who wears glasses really feels transferred to another world. Because I felt transferred to another world. Actually, everything was there, because I had the impression that the wind on my face was there. I do not know why. But it was probably such a strong transfer into that other reality. (K, 51)

- ## Presence

I said... I was going through this, but I just knew that there was a floor here, that nothing would happen to me. But my brain was going crazy at the moment, really. My brain was crazy. It didn't know what was happening (M.37).

You have the impression that you are genuinely involved in it (...) you are there and that is fantastic. (M, 24)

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- High technical quality of the simulation

- No delay in response

- Easy control

- Cheating' as many senses as possible

−

- External voices

- Technical shortcomings

- No body

- Weight of goggles, cable

- Limitations on the physical size of the room

- No other people (!)

EMOTIONS

I was very emotional about this. Even now, I have tears in my eyes, because when I saw this sea, I immediately... I would like to go back on holiday. It was so... gee, it was so... it was so... on me, it affected me so emotionally. (...) But it's... I'll tell you that such incredible emotions. It was the first time I wore something like that. To be honest, it was good for me there. It was nice. (K,50).

CONCLUSIONS

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▸ Teleportation is the most convenient way to travel in VR

▸ Applications for the young can be demanding and complex. For older adults - better not

▸ A simple interface is a huge magnet for mature people

▸ For greater immersion in VR should:

    ▸ Remove as many 'anchors' as possible that are actually holding

    ▸ Stimulate as many senses as possible

    ▸ Give opportunities for social interaction

▸ VR is experienced, not interpreted

I'VE NEVER MET A SKEPTIC OF VR WHO HAS TRIED IT.

Tim Sweeney (Epic Games, Unreal Engine)

![National Information Processing Institute logo]

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