

CHI 2017

Student Game Competition
Innovative Interface



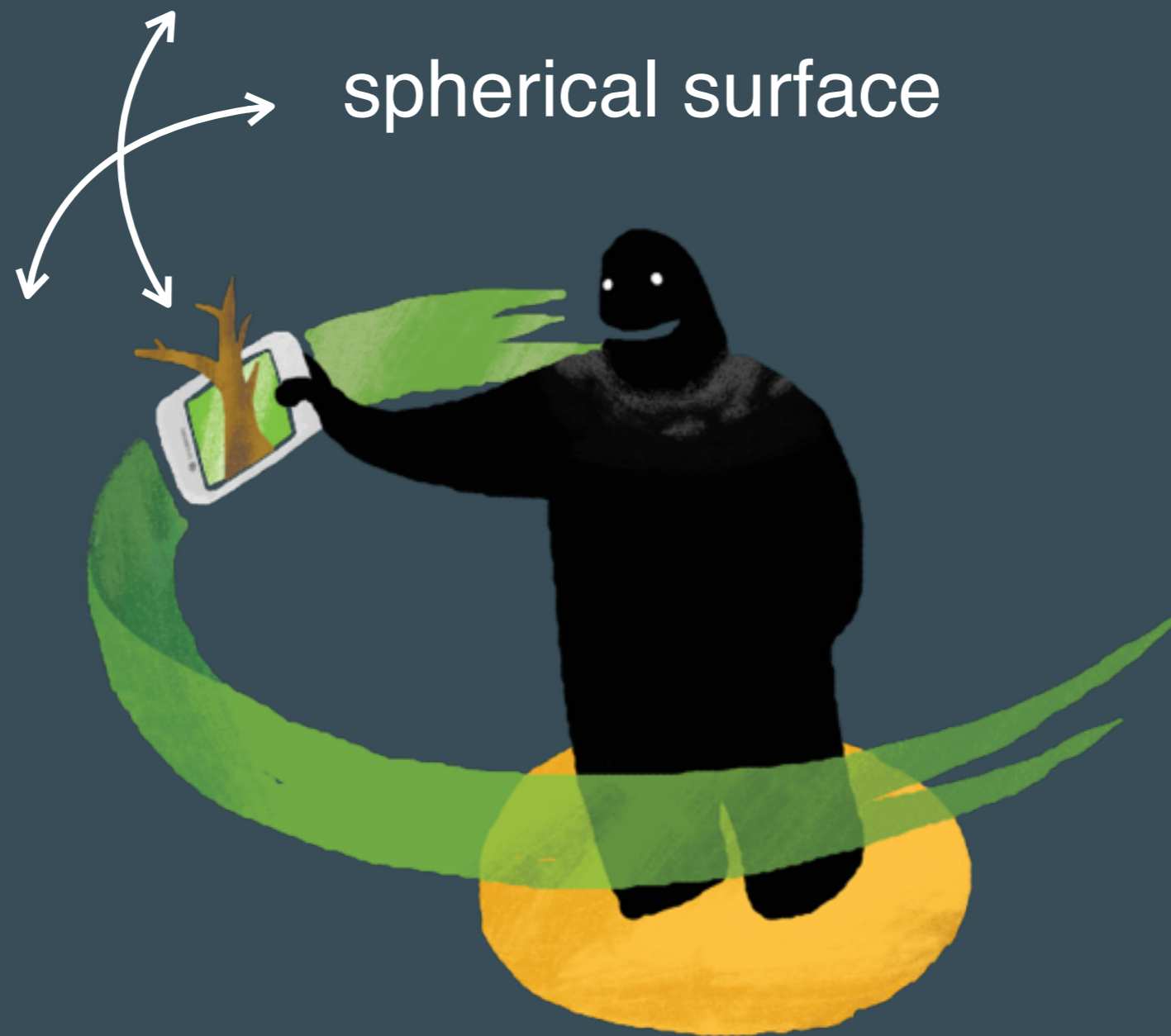
WAYOUT

A MULTI-LAYER PANORAMA MOBILE GAME
USING AROUND-BODY INTERACTIONS

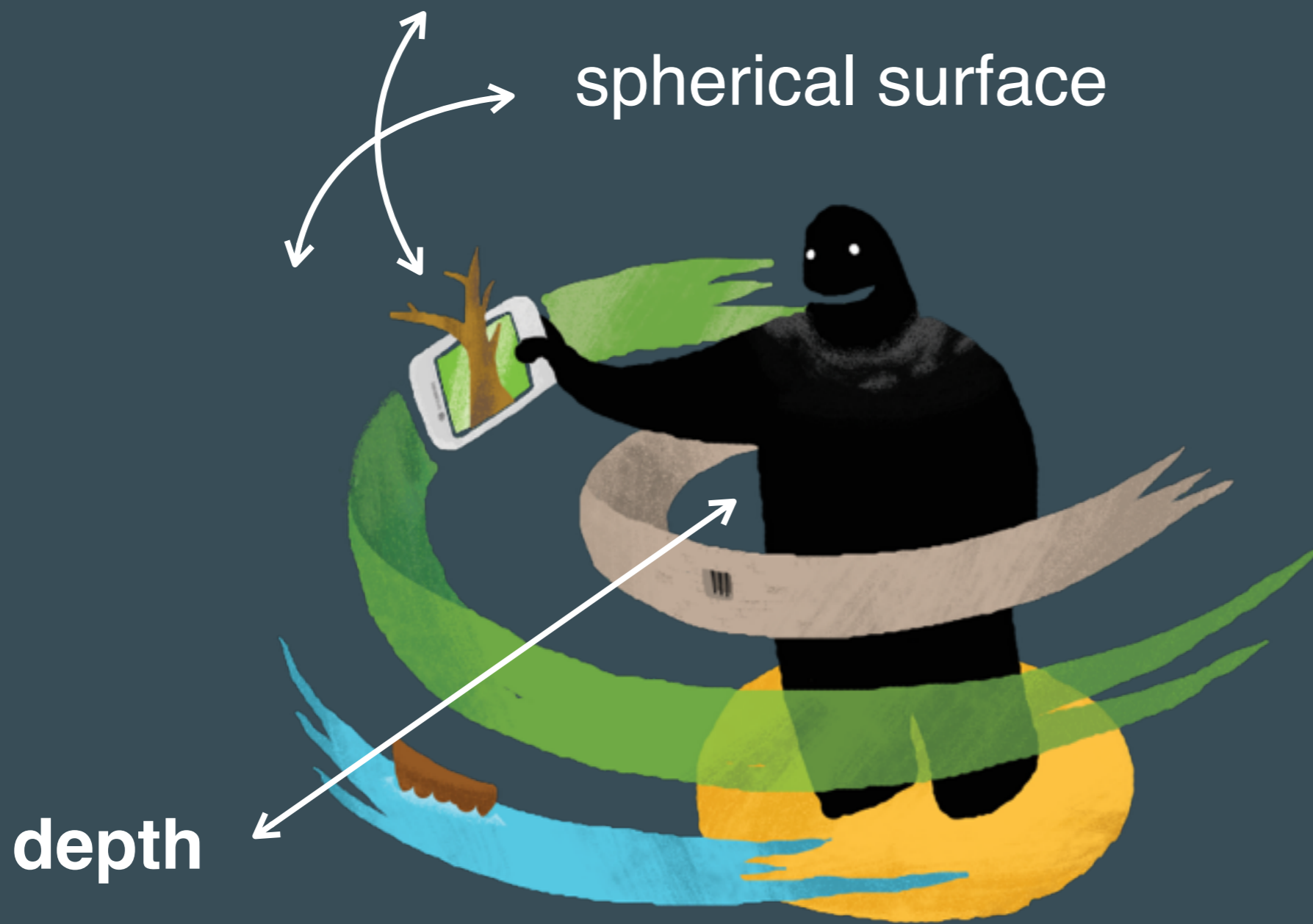
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360 degree panorama



Navigation is limited to
single-layer panorama



Depth enables **multi-layer** panorama navigation



Face tracking
with built-in front-facing camera



Way Out
multi-layer panorama interactions



Technology

2. Estimate the distance between phone and player by the distance between eyes*



1.

Track facial feature points with OpenCV using built-in front-facing camera

Unity on iPhone

* We have improved the implementation after camera-ready version.

Non-rigid face tracking (OpenCV)



Nearest



Farthest









Game Design*

* We have improved the game design after camera-ready version.

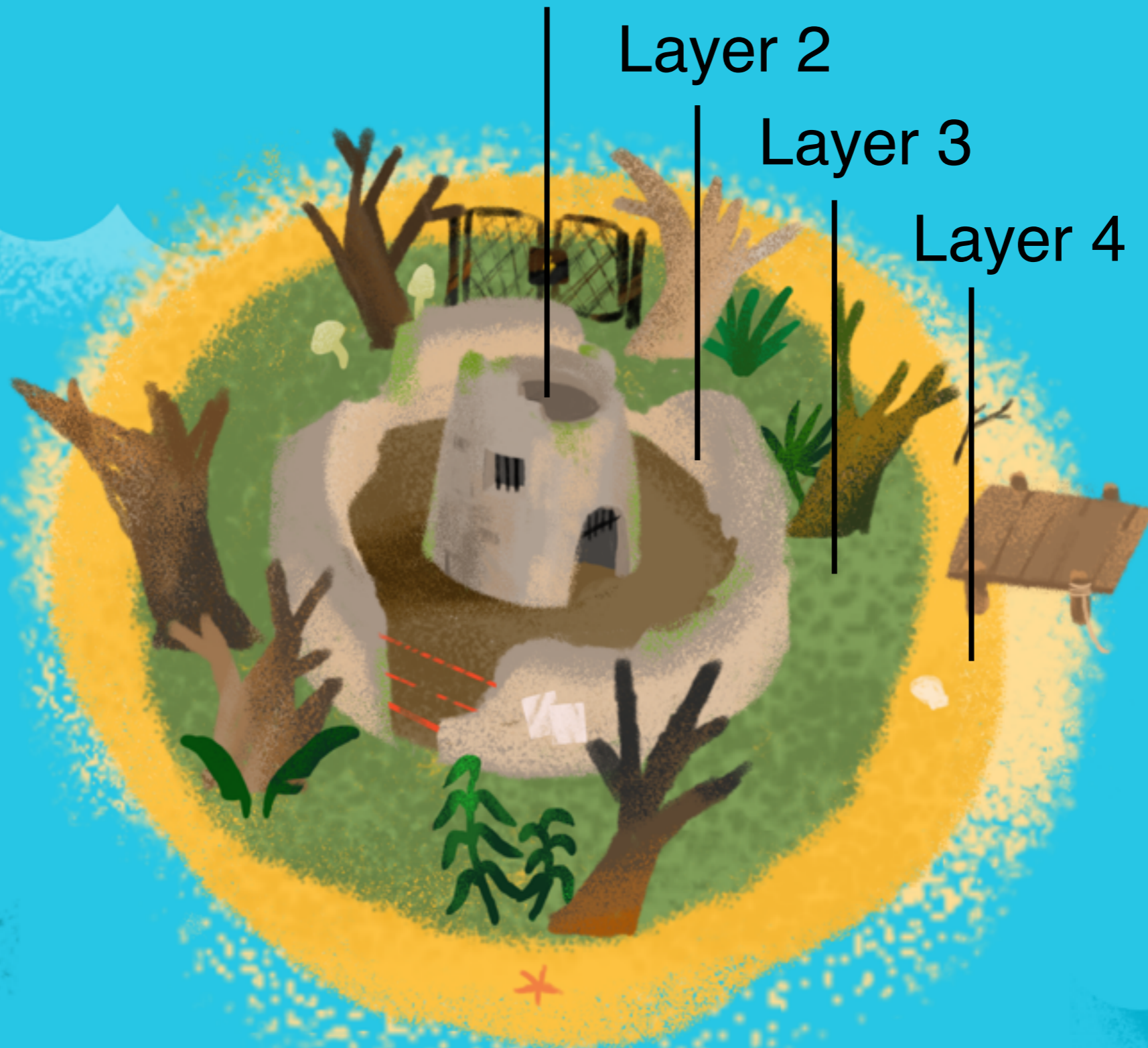
Multi-layer panorama scene

Layer 1

Layer 2

Layer 3

Layer 4

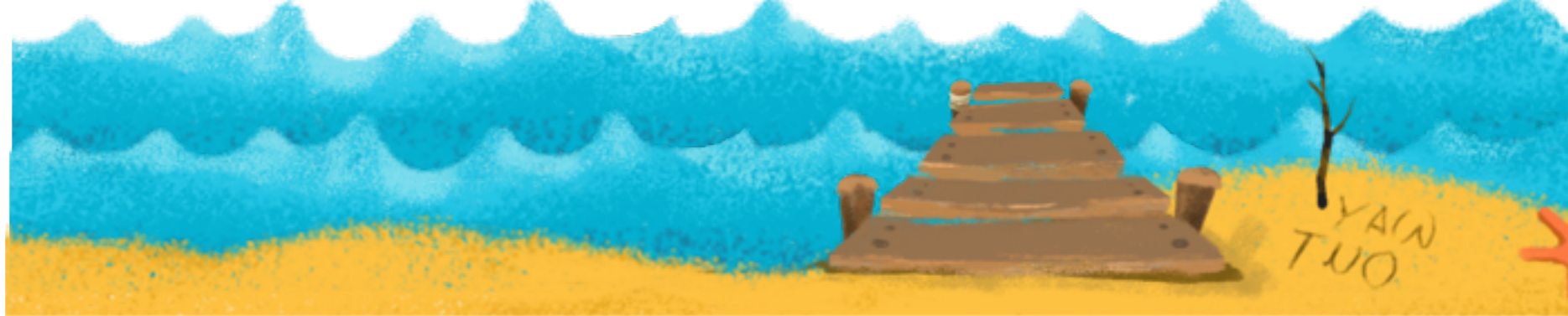


Far



Layer 4

Shore



Layer 3

Forest



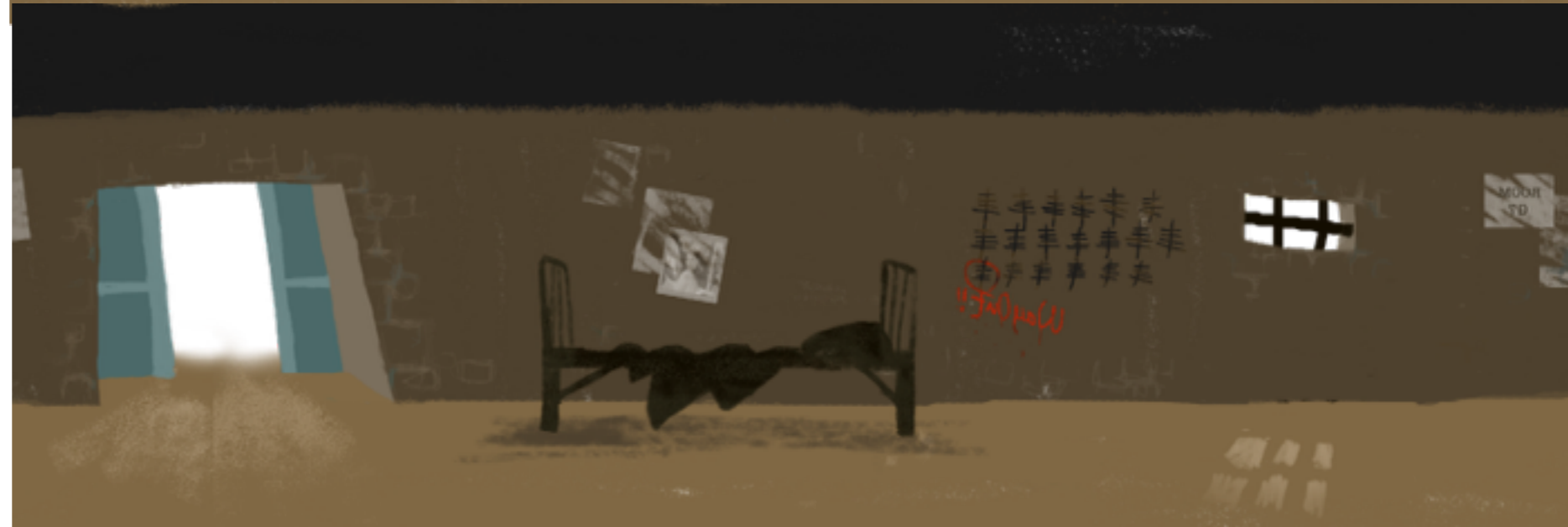
Layer 2

Wall



Layer 1

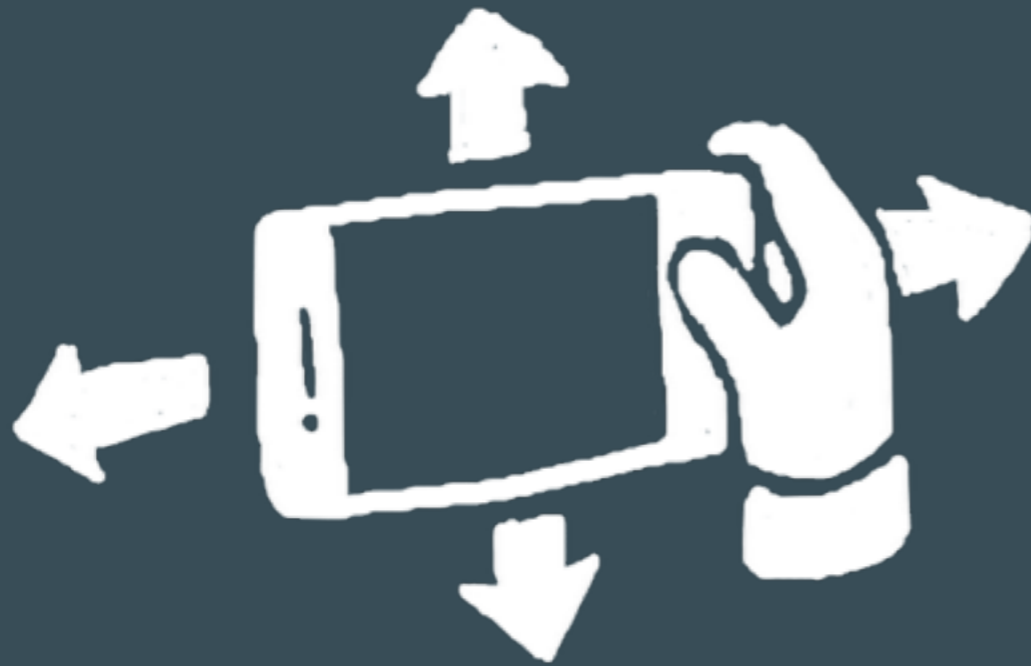
Cell



Near body

find a way out

Navigation in 3D space



Explore current layer



Cross different layers

Dragging and manipulating items



Drag items



Shake tools

Limitation

Player's **arm is not stable** and **feel fatigued soon**

The number of layers is limited since the length of arm and the muscle memory is limited

Contribution

Way Out explores the around-body interactions in multi-layer panorama:

- **Stand-in-place navigation in multiple layers that matches body movement**, which is comfortable and preserves immersivity.
- Multi-layer scenes that make use of player's **spatial memory**.
- **Dragging and manipulating game items** in multiple layers feels more natural.

THE END



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