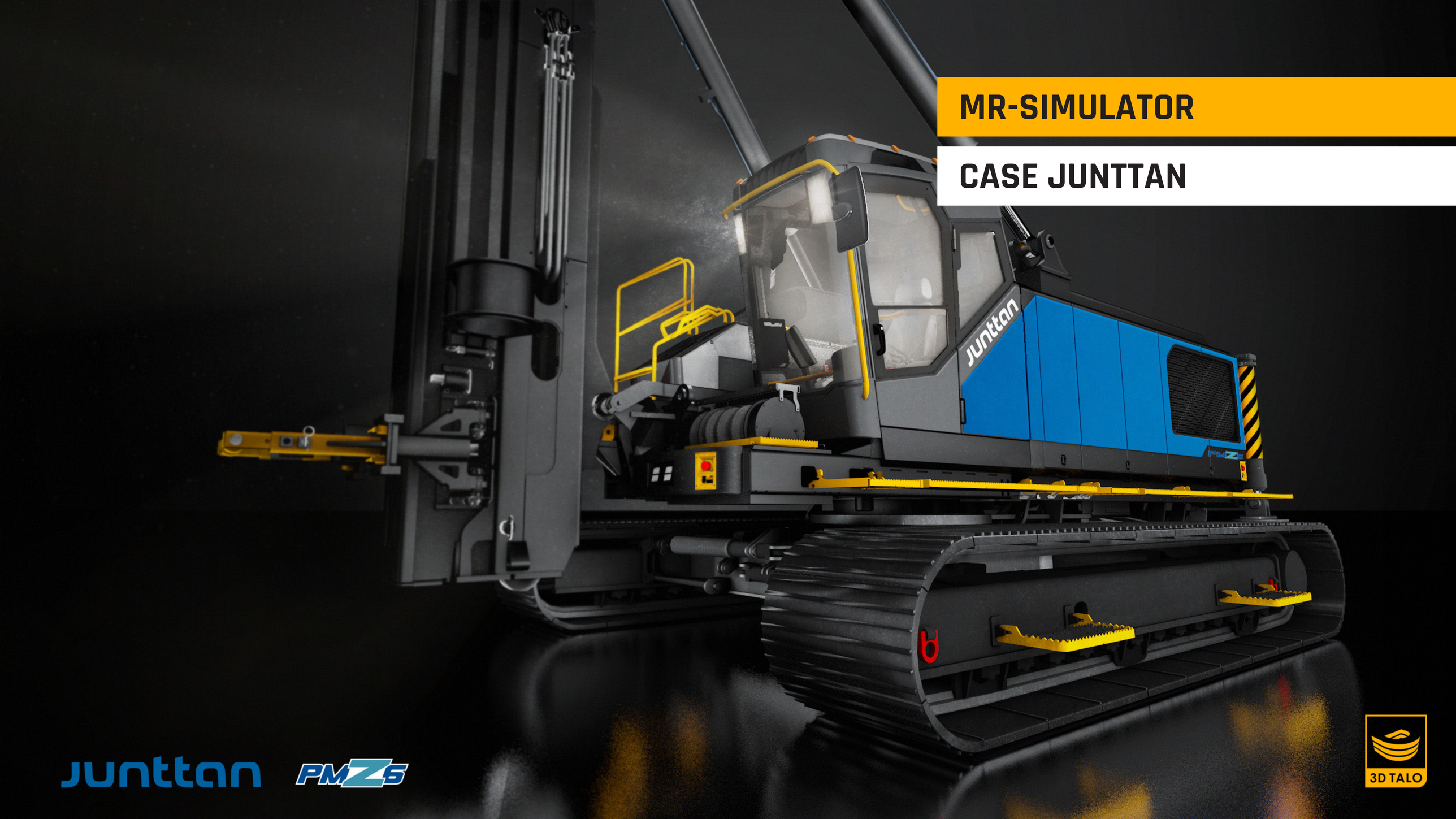

MR-SIMULATOR
CASE JUNTTAN
juntta
PMZ
3D TALO

VIRTUAL REALITY + AUGMENTED REALITY

MIXED REALITY

The main goal of the MR-simulator was to offer realistic and intuitive experience to the users. The controls and user’s hands and legs also had to be seen in virtual reality.

We ended up using StereoLabs’ ZED-mini stereo camera installed in front of HTC Vive pro headset with a custom 3D printed adapter.

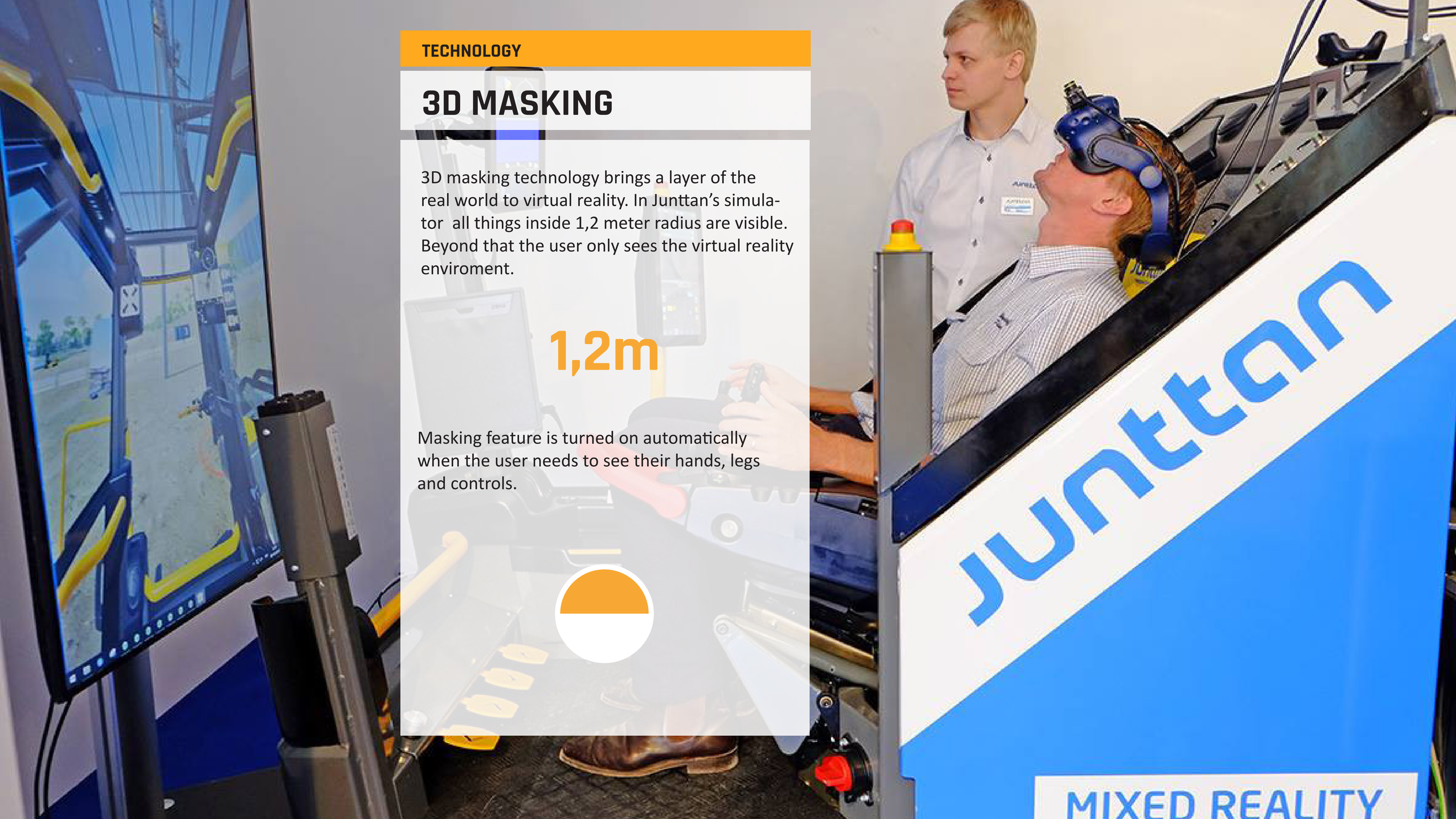
TECHNOLOGY

3D MASKING

3D masking technology brings a layer of the real world to virtual reality. In Junttan's simulator all things inside 1,2 meter radius are visible. Beyond that the user only sees the virtual reality enviroment.

1,2m

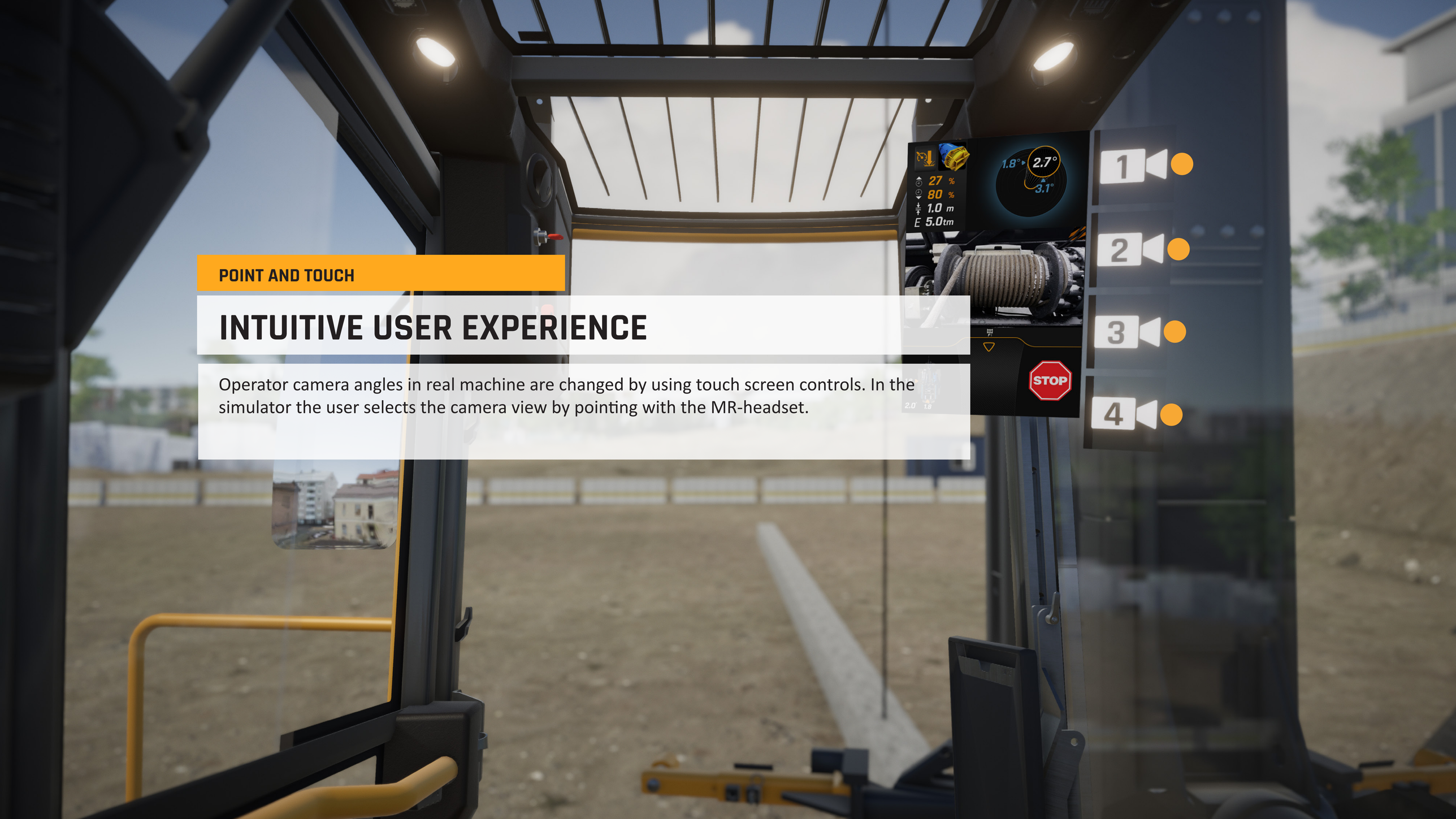
Masking feature is turned on automatically when the user needs to see their hands, legs and controls.



GAME READY VIRTUAL REALITY MODEL

OPTIMIZED CAD-MODEL

Junttan`s piling machine was optimized by using dimensionally accurate CAD-model. By removing useless geometry we released computing resources to more realistic lightning, detailed enviroment and materials.



POINT AND TOUCH

INTUITIVE USER EXPERIENCE

Operator camera angles in real machine are changed by using touch screen controls. In the simulator the user selects the camera view by pointing with the MR-headset.

ADDITIONAL BENEFITS BY USING PHOTOGRAMMETRY

CREATION OF THE SIMULATOR ENVIRONMENT

We brought a real construction site to the simulator. The simulator environment included Valkeisenlampi park area, Kuopio City Theatre and buildings around the site. The construction site was scanned using quadrocopter.

Final site was refined using custom 3D assets to achive more realistic surroundings.

ANGLES OF VIEW AND BLIND SPOTS

VALKEISENLAMPI CONSTRUCTION SITE

We optimized the 3D geometry by removing useless and unseen surfaces. It was important to control the level of details in the scene. 3D objects near of the machine were more complex and objects in longer distance were more simple.

It was crucial to keep FPS (frame per second) high enough, because sluggish simulators make users feel motion sickness.

MOVEMENT AND REALISM

TRACKING OF MOTION PLATFORM

The cabin of the simulator was installed on a motion platform to get a more realistic feeling. We gathered real time information of the position and movement by using Vive Trackers.

CONSTRUCTION SITE

CITY THEATRE

THE POND OF VALKEINEN

3DTALO.FI