D!VIRTUE

VR APP DEVELOPMENT

WORK IN PROGRESS
OCTOBER 2025

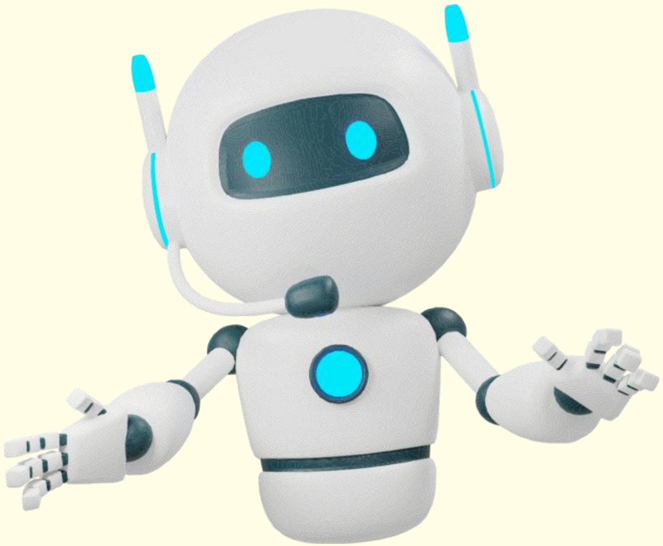
Presentation Structure (Agenda)

1. Current Stage

2. Overview of Work in Progress

- Adaptation script for VR App
- 3D Modelling
- VR Visual Testing Lab
- University Campus VR Scene

3. Conclusion



This project has received funding from the European Union's LIFE

1. Current Stage

WE ARE HERE

Stage 1 – Preparation
(≈**2** months)

Stage 2 – Start of Development

Stage 3 – Active Visualization
(≈3 months)

Stage 4 – Sound, Programming, Animation
(≈ 3 months)

Stage 5 – Initial Testing
(≈ 1 month)

Stage 6 – Final Development
(≈ 3 months)

Stage 7 – Completion
(≈ 1 month)

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2. Overview of Work in Progress

- **Adaptation script for VR App:**
  The team is refining the interaction script to ensure a seamless adaptation of the storyline and user experience within the VR environment.

- **3D Modelling:**
  Our 3D designers are currently focused on developing detailed 3D models of the university campus, laboratories, robot assistant, and all supporting props to create a realistic environment.

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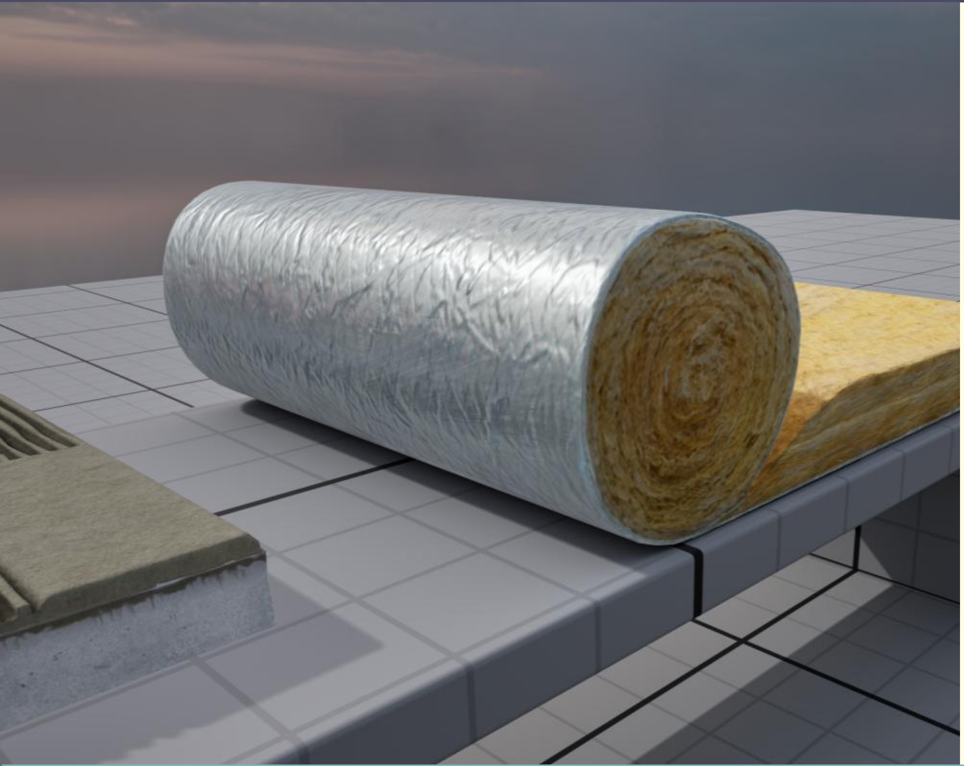
2. Overview of Work in Progress



- **VR Visual Testing Lab:**
  We are building and testing a comprehensive library of high-quality assets, tools, and construction materials that will define the visual identity and interactivity of the VR App. This stage ensures visual consistency and technical performance across the entire experience.

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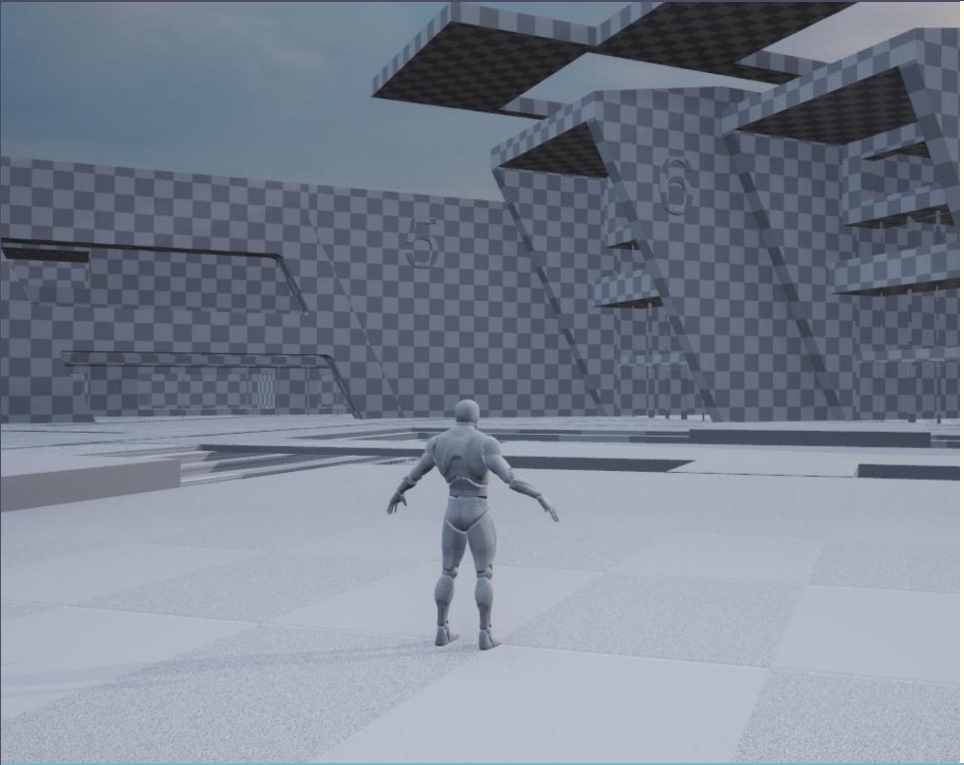
2. Overview of Work in Progress



- **University Campus VR Scene:**
  A dedicated VR scene is being developed to assess and refine the scale, proportions, and spatial relationships of the future campus exterior. This scene enables real-time testing and optimization for an authentic human-scale experience.

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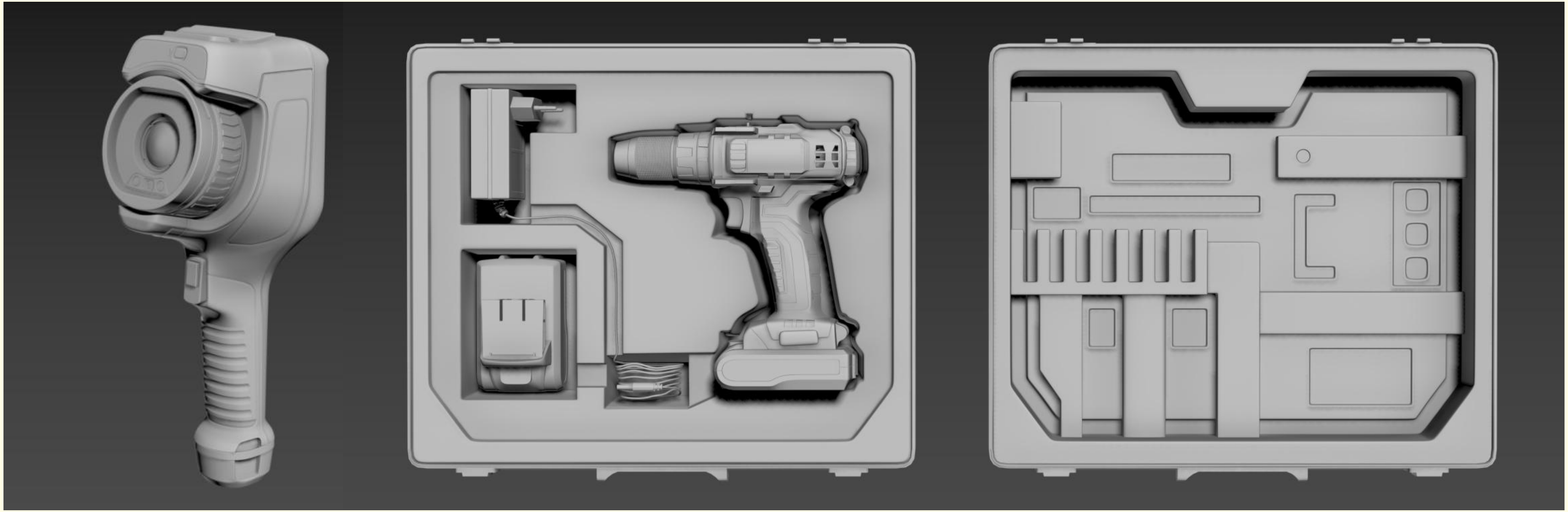
3D Modelling



The team continues to create **high-quality 3D models** of all props and environments from the script, progressing systematically from Module 1 to Module 8.

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3D Modelling

The process includes developing base 3D shapes, applying realistic textures, and adapting each asset for **seamless integration into the VR scene.**

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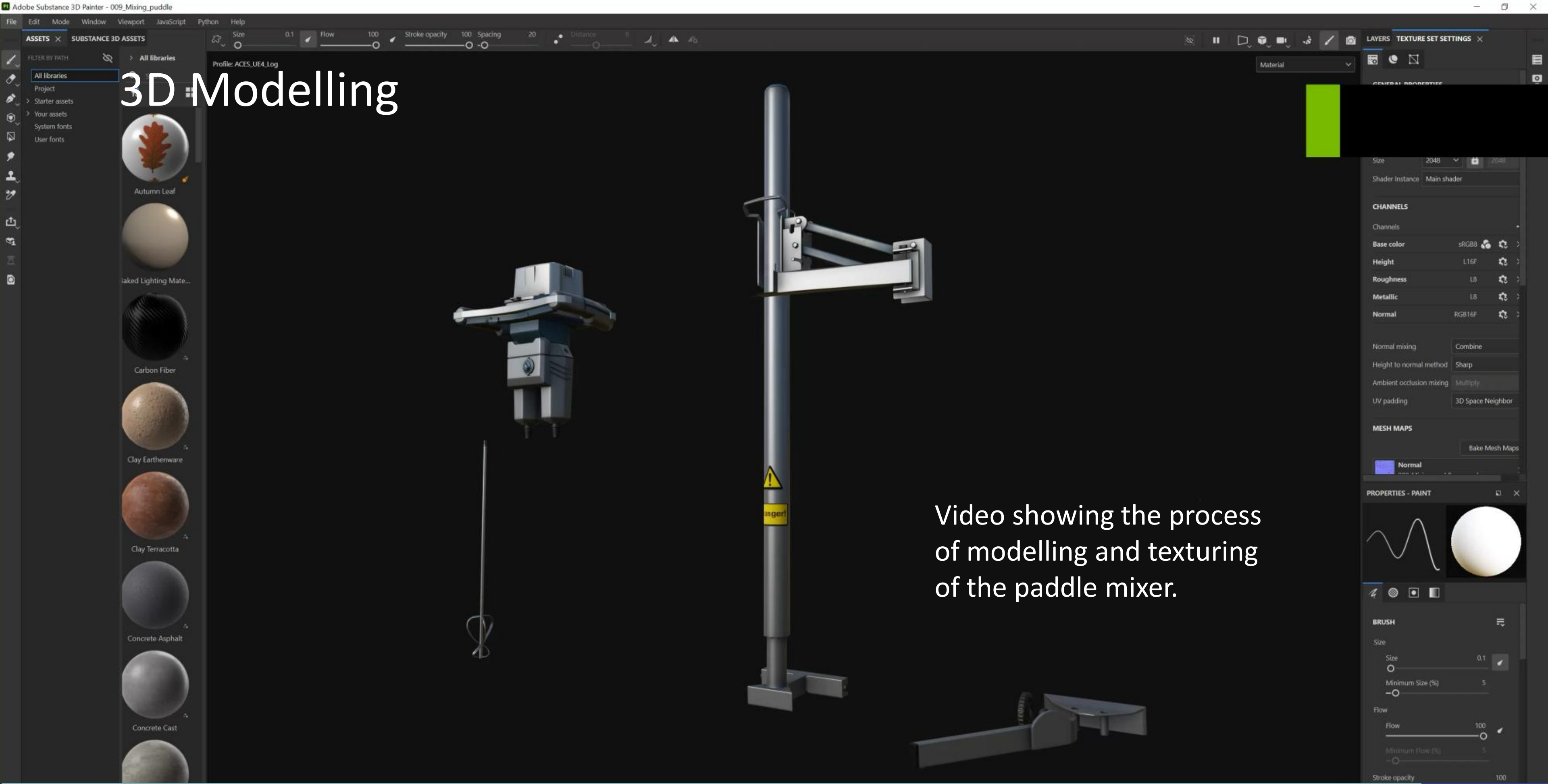
3D Modelling



Video showing the process of modelling and texturing of the paddle mixer.

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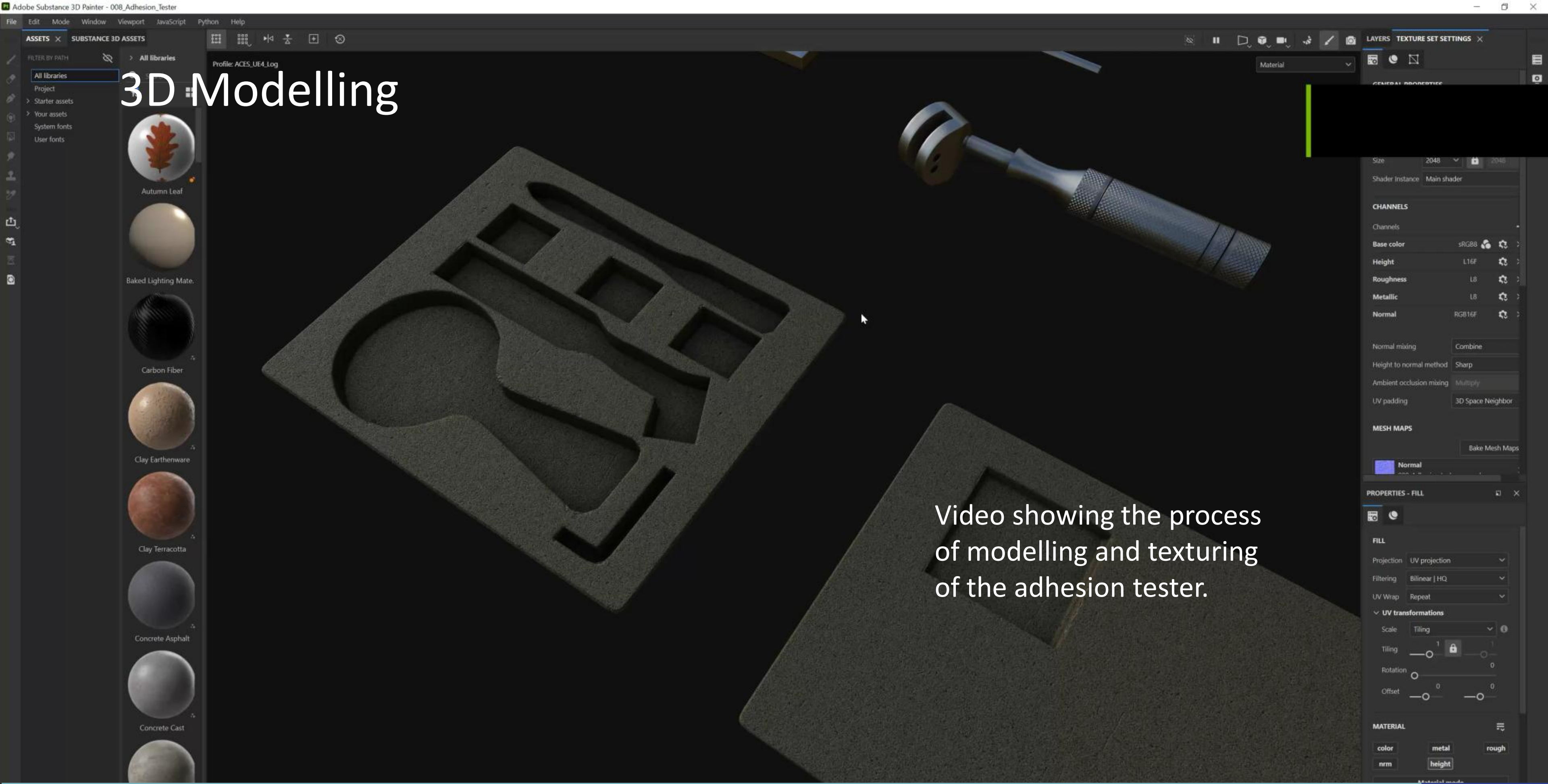
3D Modelling



Video showing the process of modelling and texturing of the adhesion tester.

VR APP DEVELOPMENT: SCENARIO

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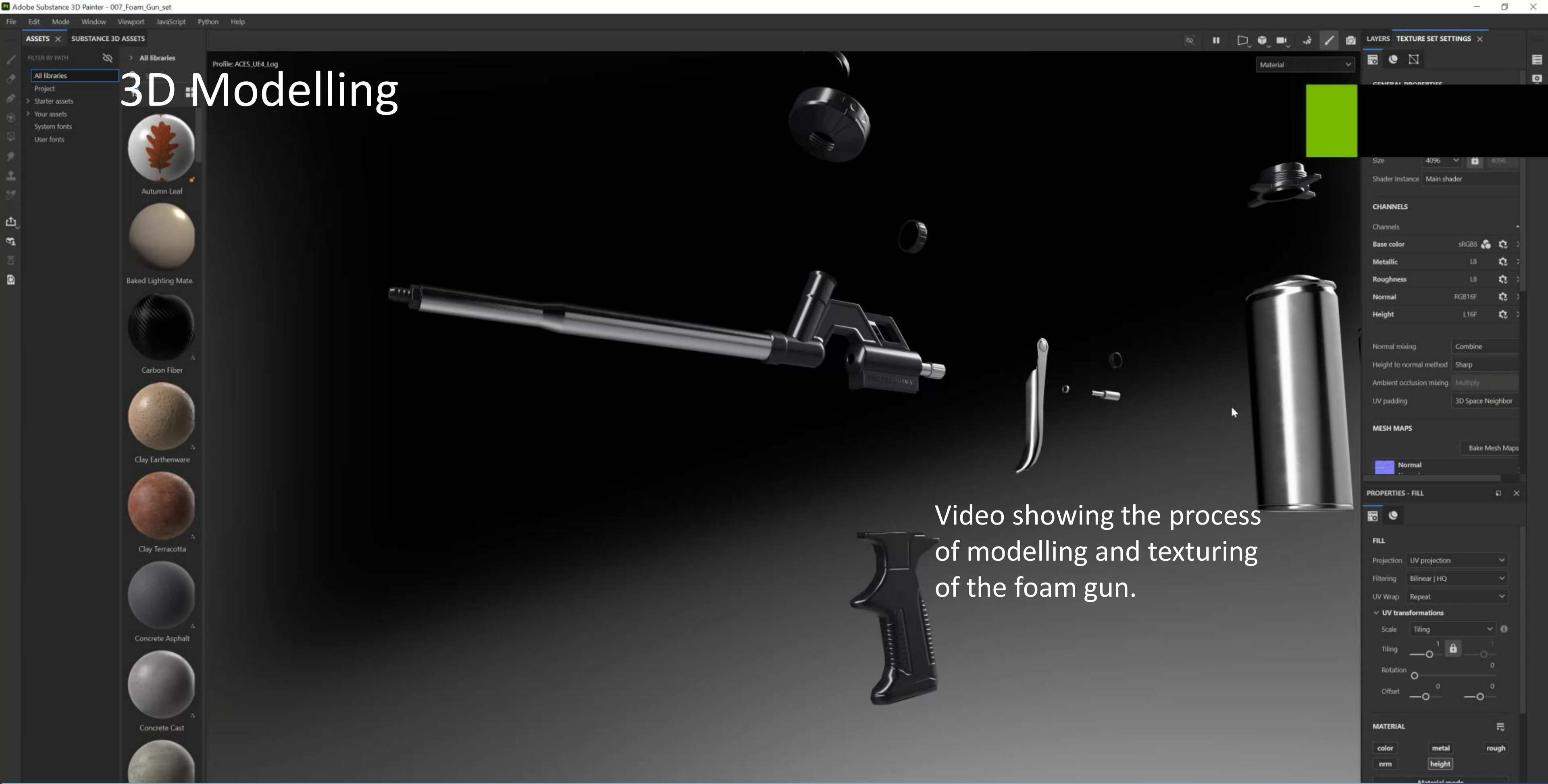
3D Modelling



Video showing the process of modelling and texturing of the foam gun.

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3D Modelling

Video showing the process of modelling and texturing of the thermal camera.

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VR Visual Testing Lab

A virtual open-air laboratory designed to evaluate the visual quality of models, textures, ORM maps, and lighting directly within Unreal Engine 5 and VR environments.

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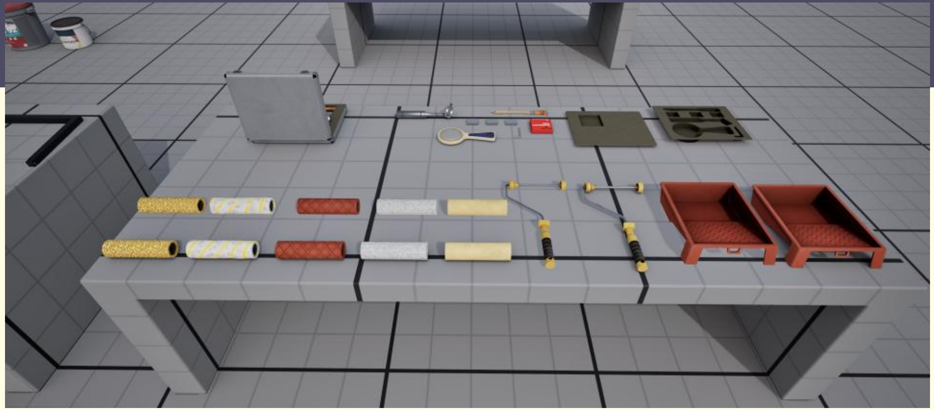
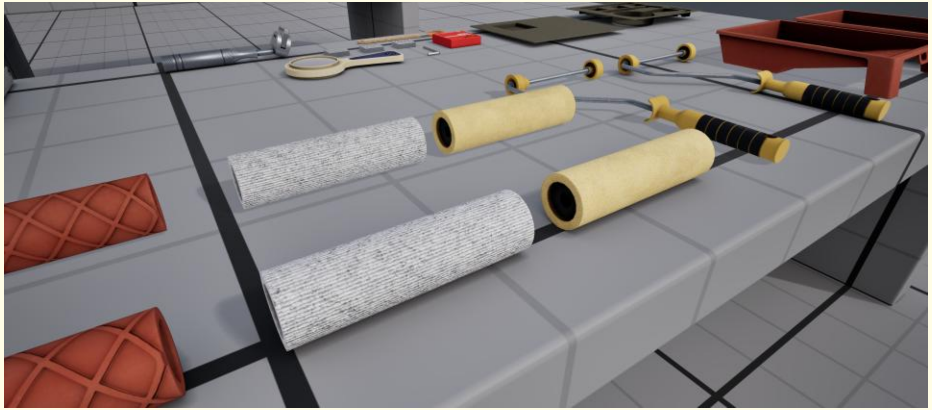
VR Visual Testing Lab

The VISUAL TESTING LAB serves as a key quality control tool during asset production.

Its main functions include:

- Testing material and texture behavior under various lighting conditions.
- Comparing baked and movable lighting results.
- Analyzing the correctness of normals, UVs, and lightmap channels.
- Checking shadows, reflections, and overall shape readability.
- Measuring asset performance in VR environments.





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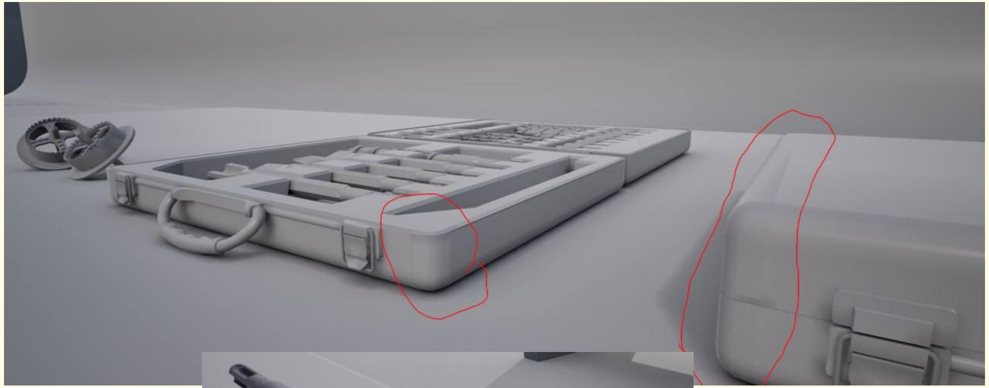
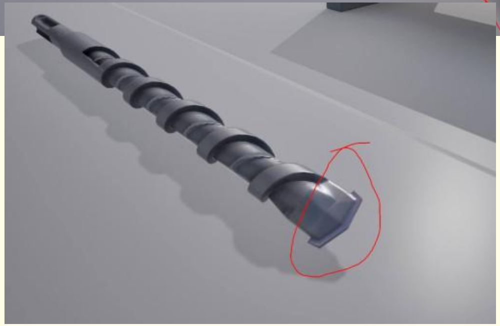
VR Visual Testing Lab: Organization





Example of identifying and fixing bugs in the laboratory.

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VR Visual Testing Lab: Organization

The scene is divided into several testing zones, or workbenches, where objects are grouped according to their functionality and purpose.

A. Tools and Equipment:

- Paint rollers of different types.
- Paint trays and containers.
- Trowels, spatulas, floats, and plastering tools.
- Measuring instruments: levels, tape measures, plumb lines, cutters, scissors, rulers.

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VR Visual Testing Lab: Organization

- Power tools, equipment cases, and storage boxes.
- Drill bit and attachment sets.
- Toolboxes, clamps, holders, and fixings.

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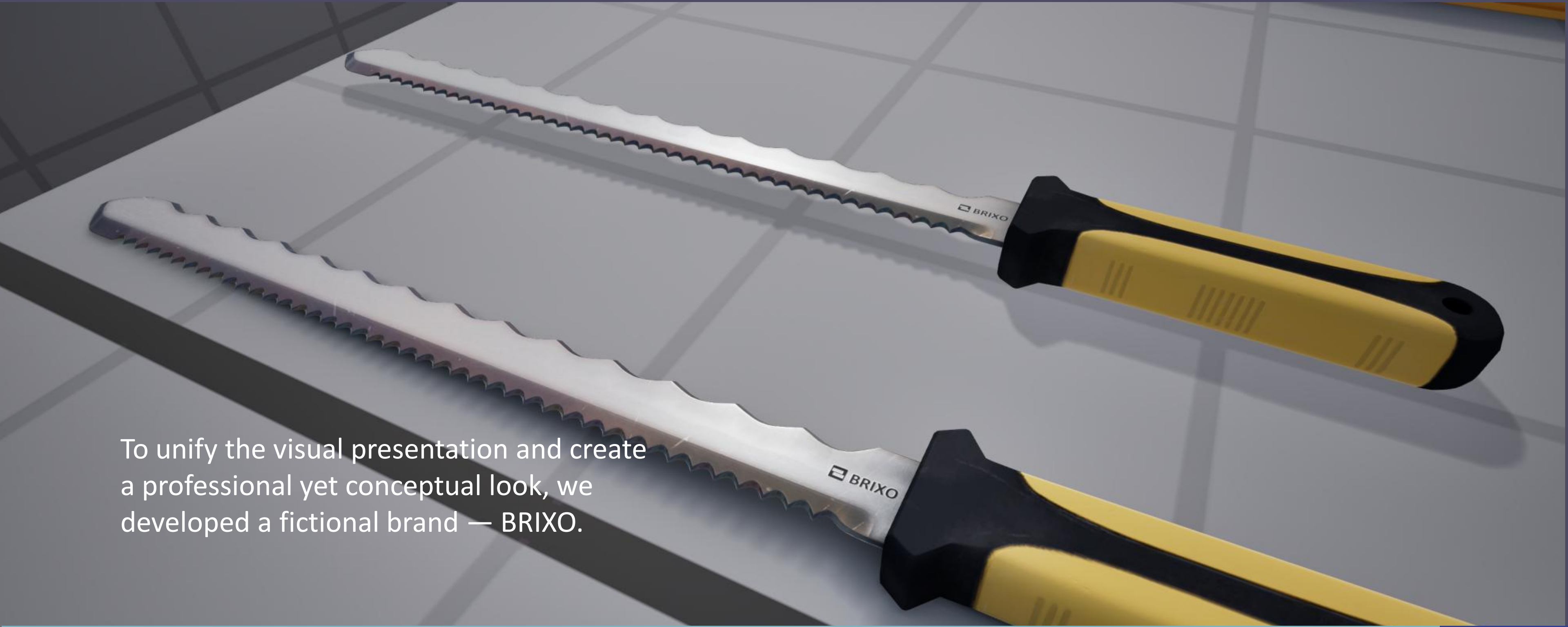
VR Visual Testing Lab: Organization



To unify the visual presentation and create a professional yet conceptual look, we developed a fictional brand — BRIXO.

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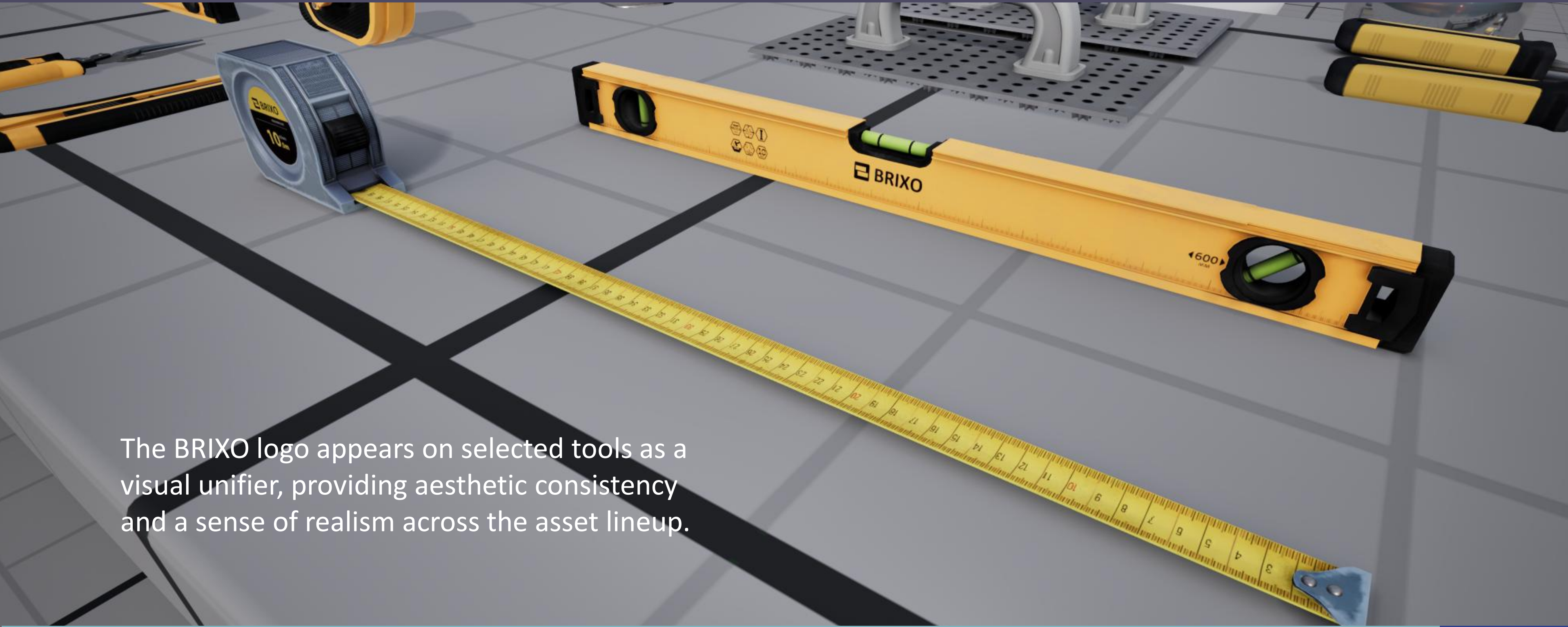
VR Visual Testing Lab: Organization



The BRIXO logo appears on selected tools as a visual unifier, providing aesthetic consistency and a sense of realism across the asset lineup.

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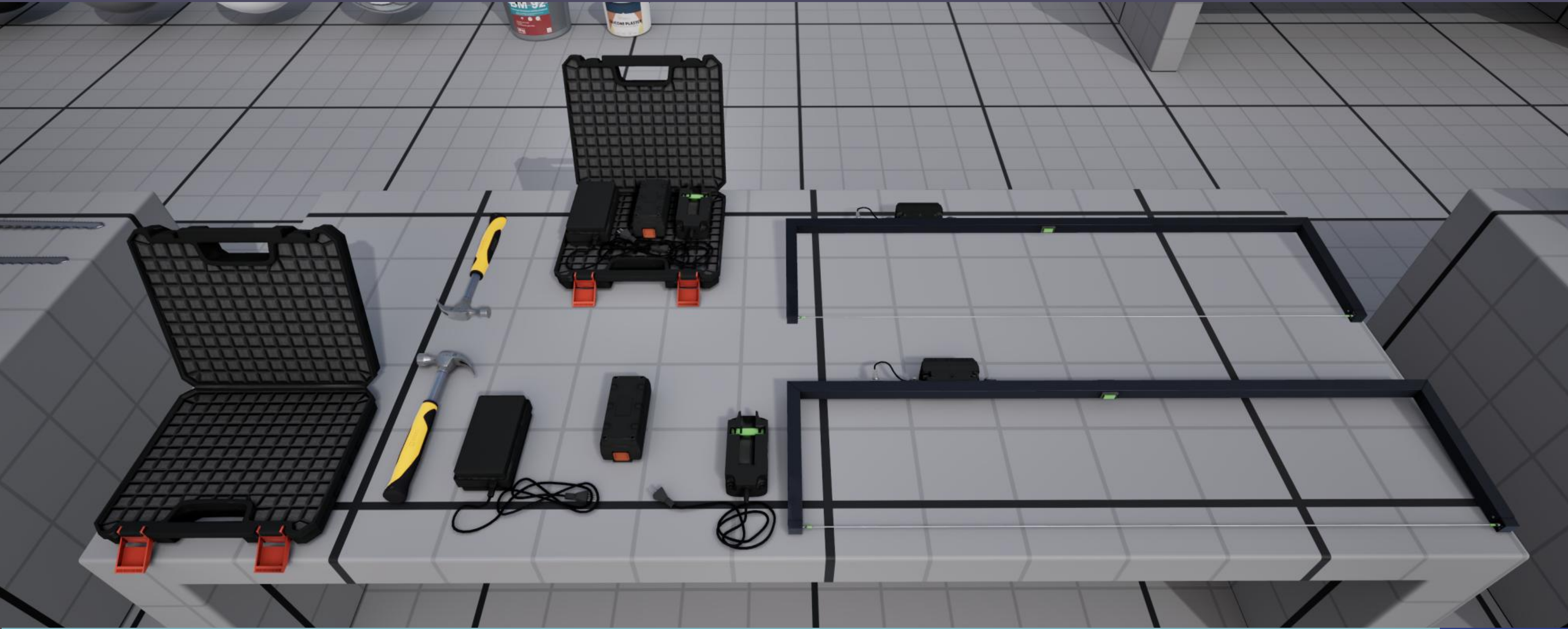
VR Visual Testing Lab: Organization



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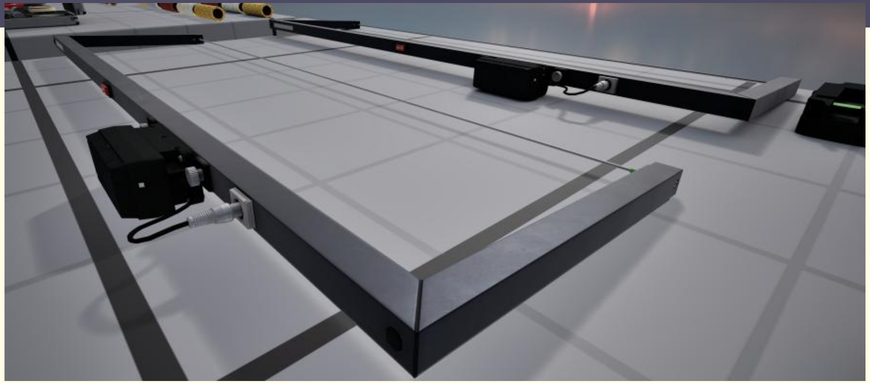
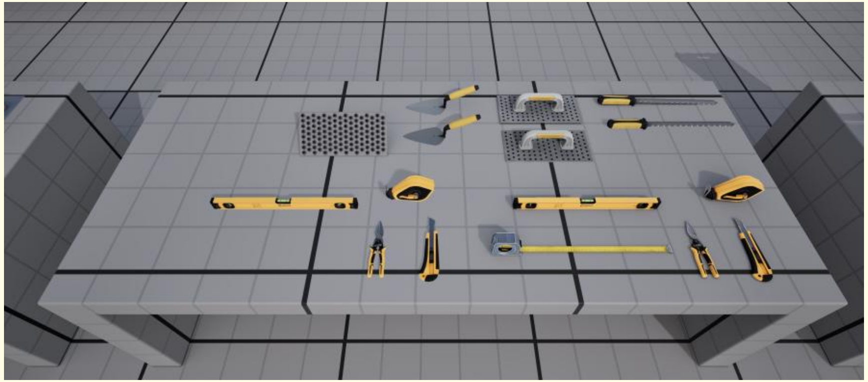
VR Visual Testing Lab: Organization





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VR Visual Testing Lab: Organization

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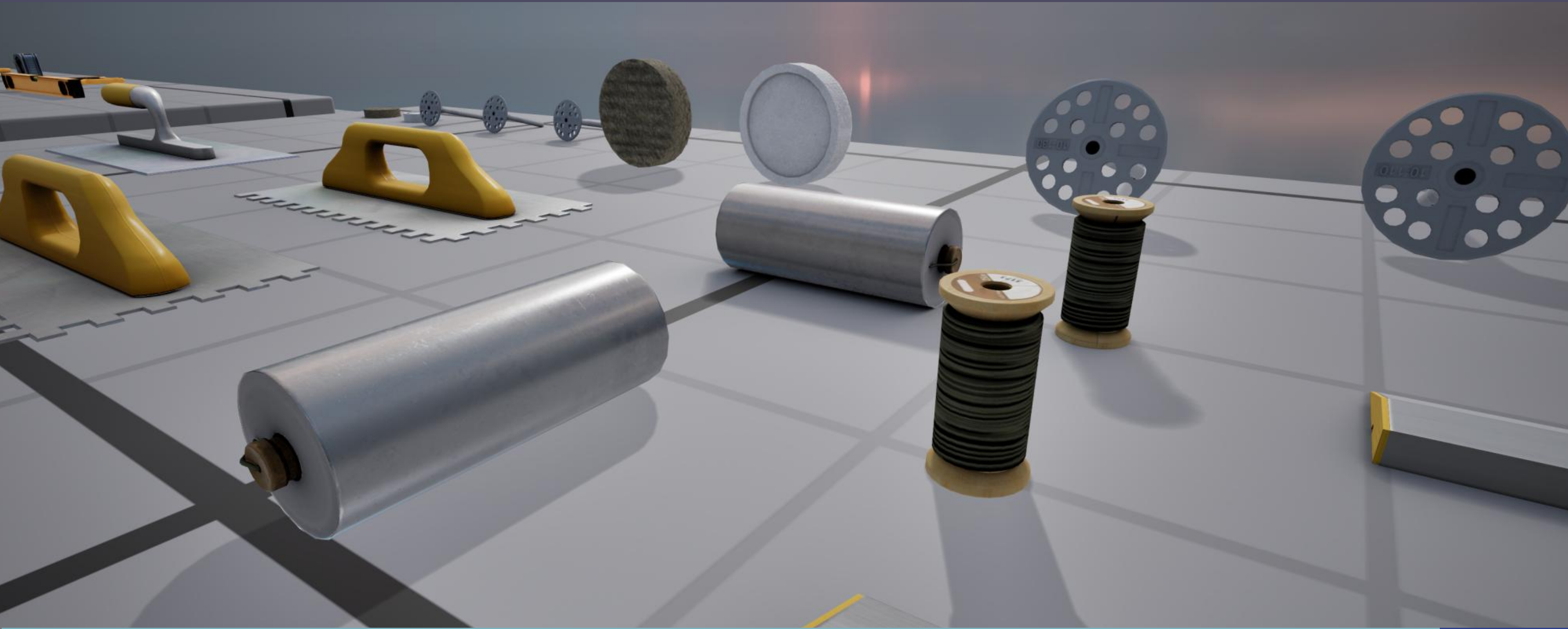
VR Visual Testing Lab: Organization



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VR Visual Testing Lab: Organization

B. Building Materials

- Various types of insulation (mineral wool, polystyrene, laminated panels).
- Sample boards with adhesive layers and surface textures.
- Buckets and containers with filler mixture simulations.
- Demonstration panels with different coatings and material densities.

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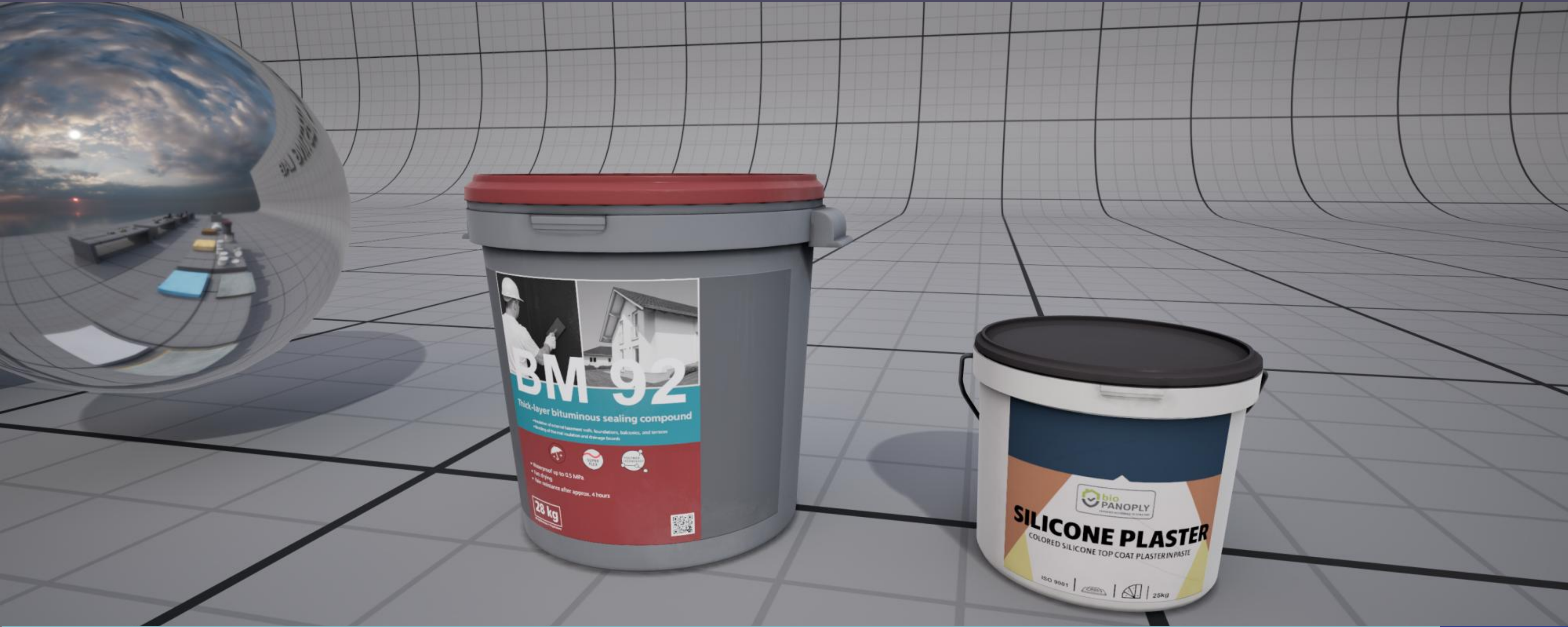
VR Visual Testing Lab: Organization



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VR Visual Testing Lab: Organization

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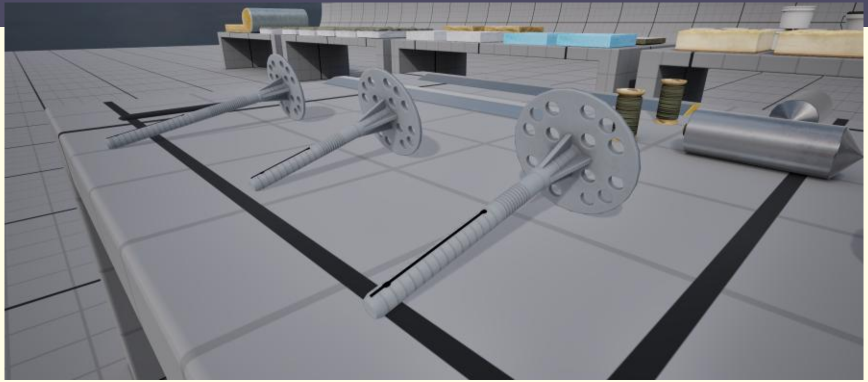
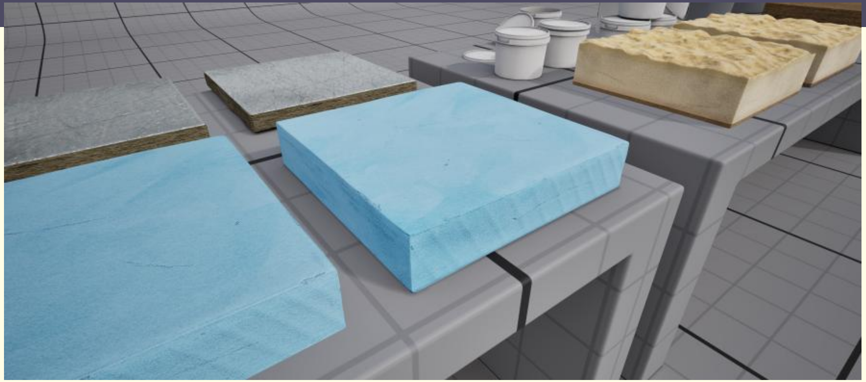
VR Visual Testing Lab: Organization





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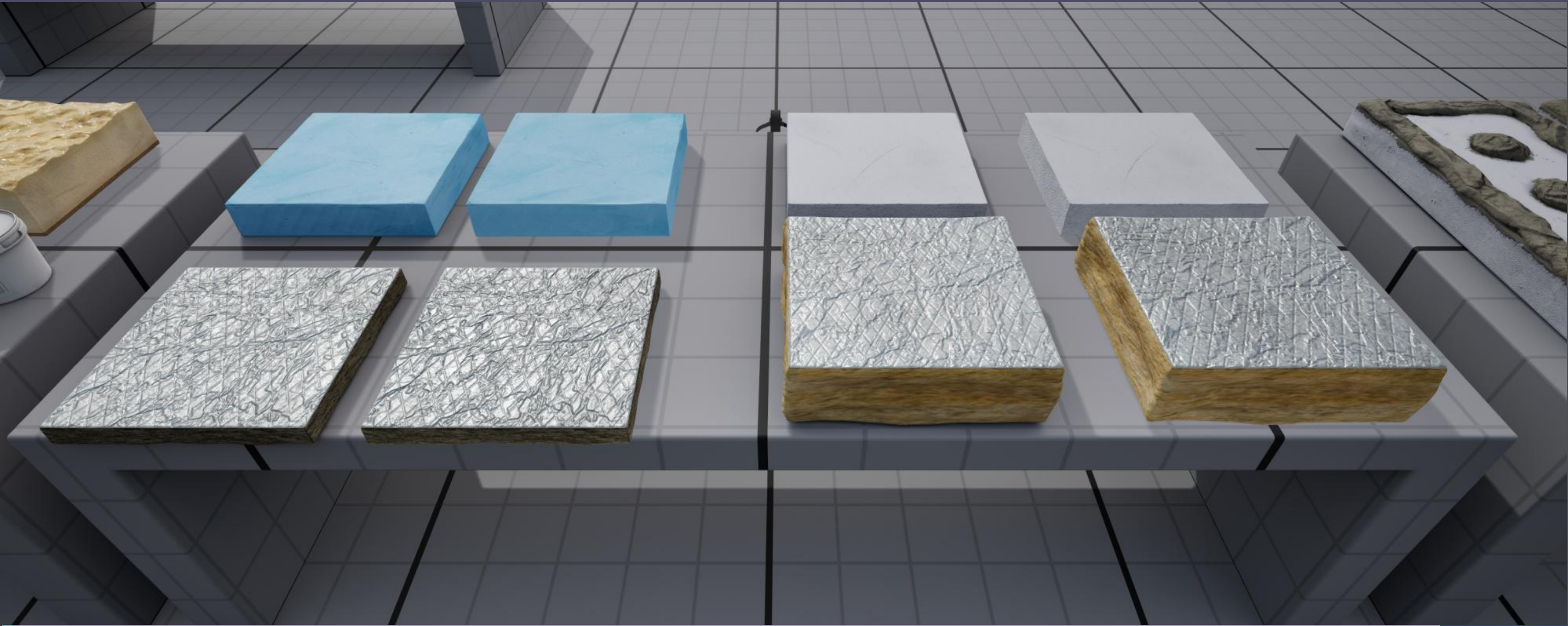

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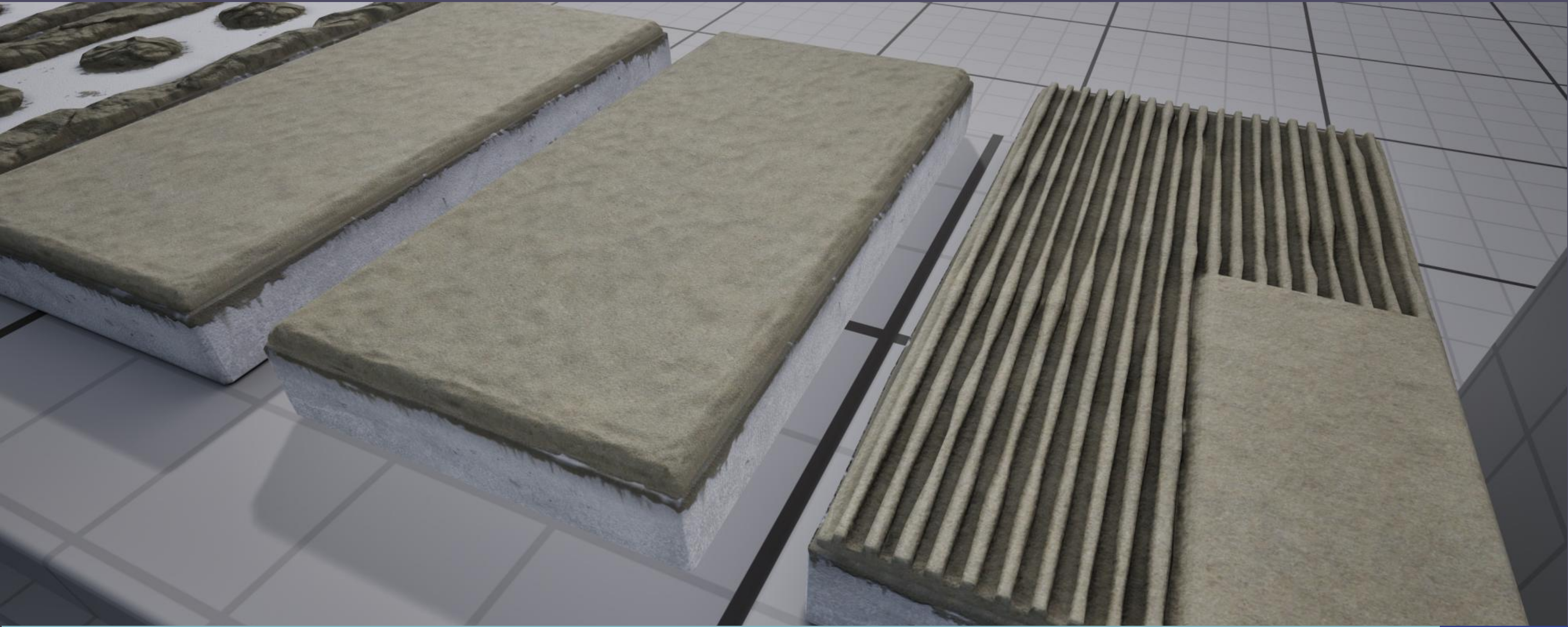

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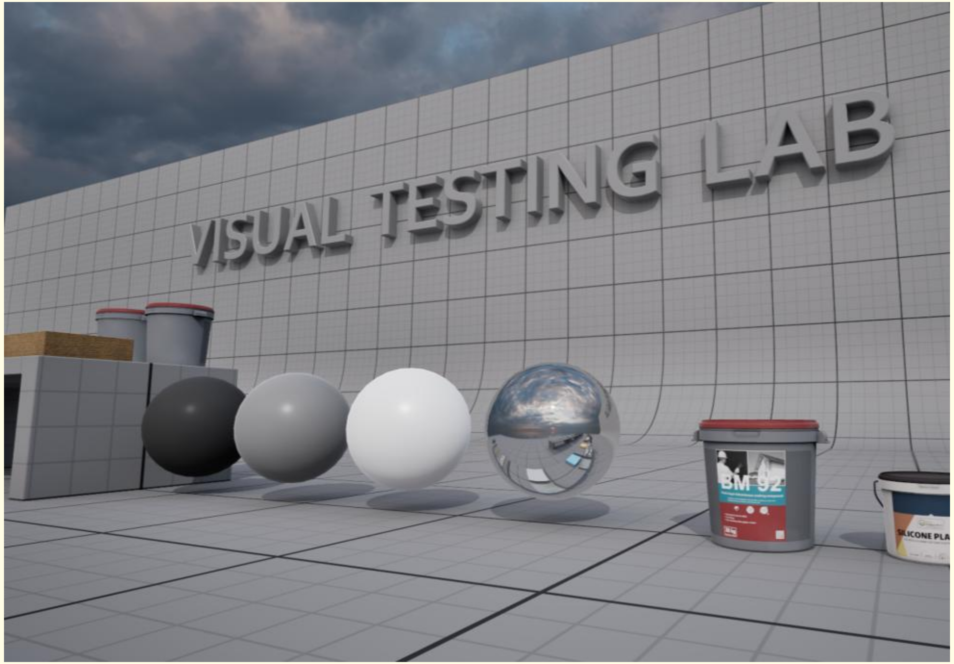

C. Technical Elements

- White, gray, black, and chrome reference spheres — for evaluating reflections and global illumination.
- Test surfaces with various PBR characteristics — for verifying ORM maps.
- Test objects with different smoothing types and normal configurations.

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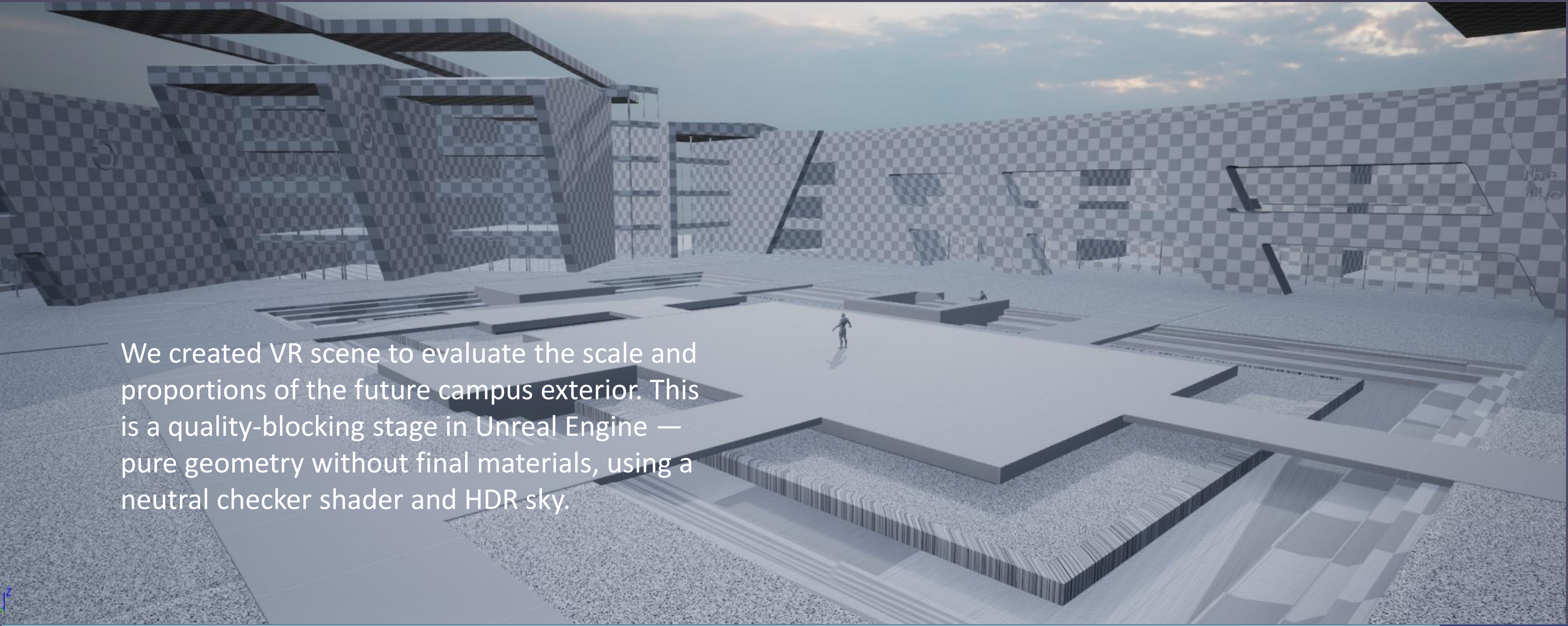
University Campus VR Scene



We created VR scene to evaluate the scale and proportions of the future campus exterior. This is a quality-blocking stage in Unreal Engine — pure geometry without final materials, using a neutral checker shader and HDR sky.

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University Campus VR Scene

The scene is now **fully interactive in VR**: we can enter, move freely, and test walking routes and viewpoints at human scale.

We are currently refining geometry and proportions — adjusting floor heights, corridor widths, opening sizes, glass facades, canopy thicknesses, plaza dimensions, and stepped terraces.

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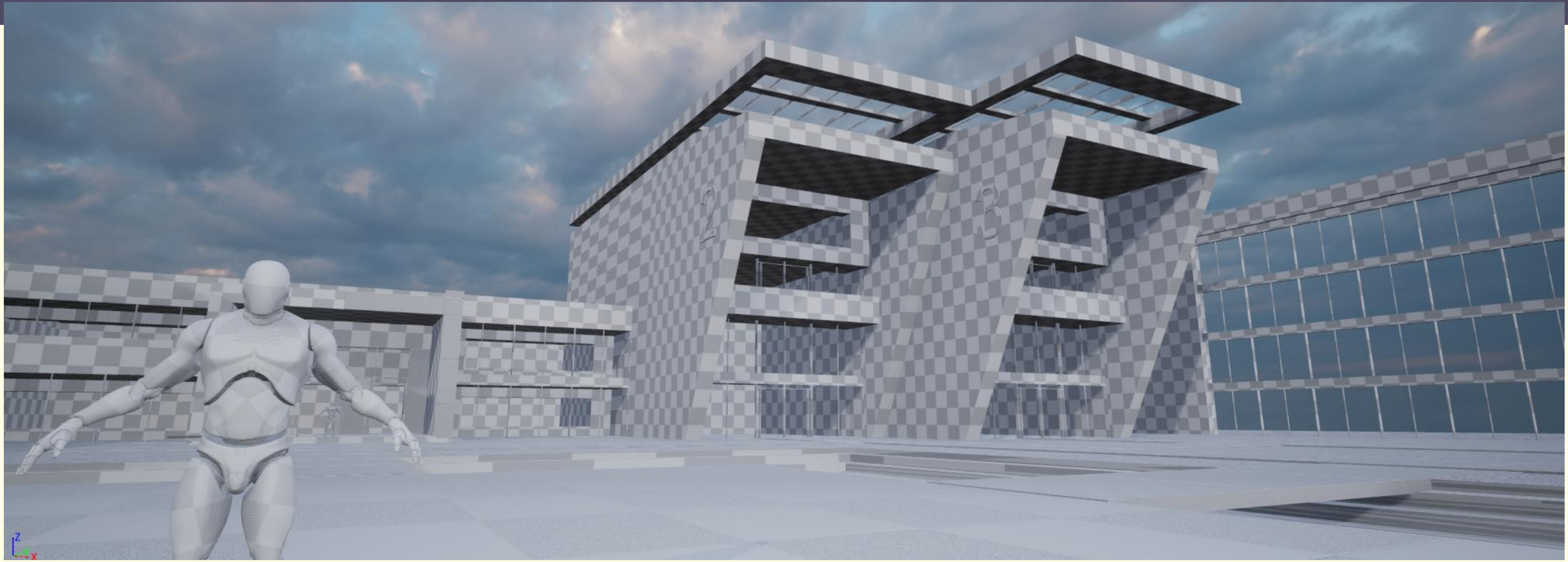
University Campus VR Scene



Elements Already Assembled: Central entrance, Laboratories for Modules 1–8 with portals, connecting galleries and bridges, large glazed facades with floating roofs, and multiple stair and ramp configurations — all tested for scale, visibility, and pedestrian flow.

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3. Conclusion: VR Production Team

✅ **Completed:**

- Fully assembled and optimized VISUAL TESTING LAB scene.
- Construction tools and material assets prepared and verified.
- Implemented baked/movable lighting comparison system. Lighting setup adjusted for shadow and shading control.
- Basic VR grab interaction system established.

🚧 **In Progress:**

- VR optimization (LOD generation, polygon density, lightmap tuning).
- Development of a separate HAND INTERACTION LAB to test hand-grab behavior.
- Refinement of shadow softness and visual balance under dynamic lighting.
- Build a walkthrough version for internal and client review (targeting stable 72–90 FPS in headset).

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3. Conclusion: Overall

We are continuing work on the active visualization stage, finalizing 3D modeling for all props in **Module 1**, including **Laboratory 1** and its furniture. In parallel, the team is also developing the **Main Menu** interface for the main campus.

Our goal is to deliver a test **VR experience of Module 1 by the end of November.** As discussed, the demo version will focus on environmental testing — featuring functional interactions without voice-over or sound effects. Users will already be able to view and manipulate objects within the virtual scene.

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Thank you for your attention!

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