JOURNEY TO A SUSTAINABLE 3D PIPELINE

The Beaver's Approach

3D Pipeline Days 2023

11/3/23

ALLES MACHBAR MIT OBI

Agenda

1. Situation
2. Vision and Approach
3. Use Case: 3D Planning Tool
4. Q & A

Source: OBI

We are one of the key players in DIY in Europe with 50+ years of shaping the industry

OBI in figures

- 50+ years of DIY heritage and strong OBI brand recognition
- 43,000 employees
- 646 locations in 10 countries
- More than 5 million registered heyOBI users
- More than 450 million visitors on all OBI domains
- Total revenue of EUR 8.7 billion in financial year 2022
- Over 200 thousand different products in hundreds of different categories
- One beaver

Source: OBI

ALLES MACHBAR OBI

Since 2016, the CGI production at OBI grew fast and required visual and technical quality improvements to compete with upcoming projects

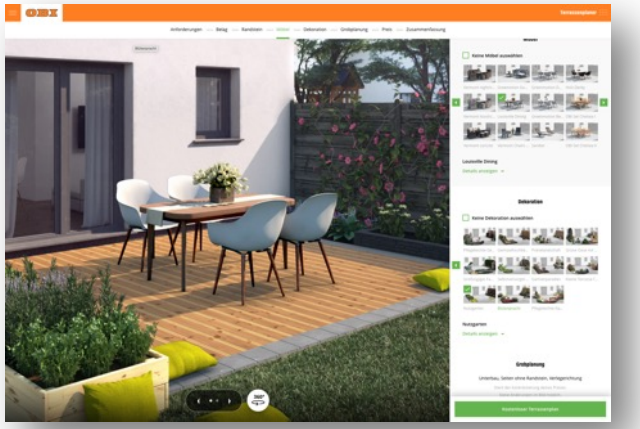
Situation in 2019

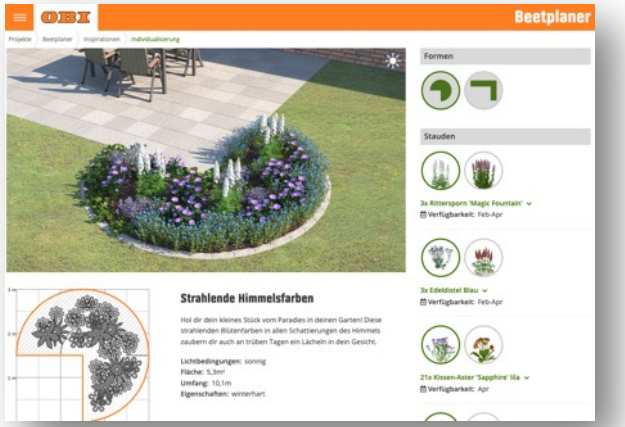
Environment

- Fast production
- External production team
- 3ds Max & V-Ray
- Sparse reference images
- External development team

Results

- Growing model library
- Varying visual quality
- Low technical standards





- "Content Push" - replace photography
- Modernise 2D configurators

Source: OBI

ALLES MACHBAR OBI

Agenda

1. Situation
2. **Vision and Approach**
3. Use Case: 3D Planning Tool
4. Q & A

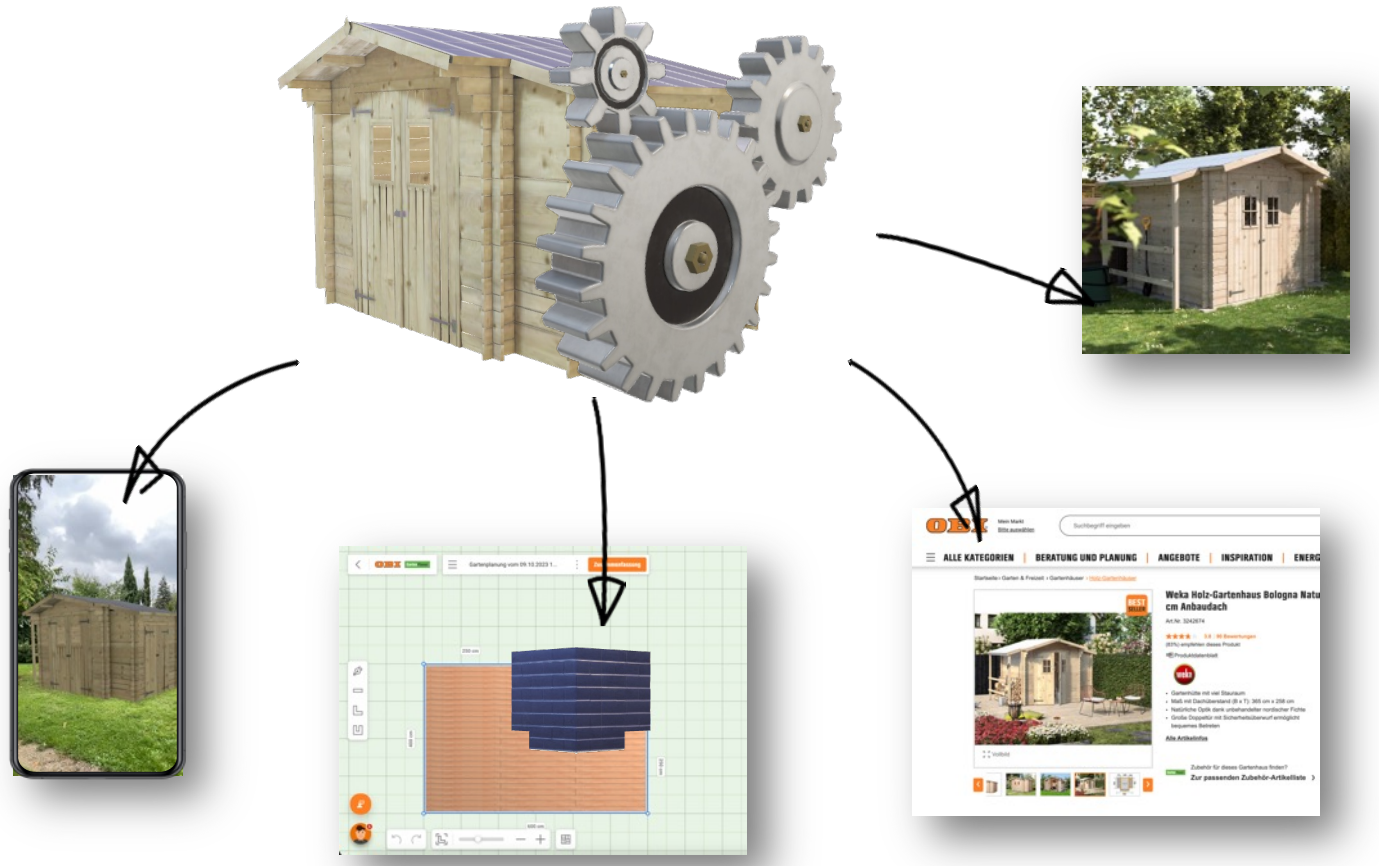
Source: OBI

Create photorealistic assets, ready for reuse in future applications at low costs

Vision of 3D Model Usage in OBI ecosystem

Use Cases

- Photorealistic offline renderings
- 3D model in online shop
- Web based 3D planning tools
- AR in online shop & heyOBI app
- ...



Source: OBI

ALLES MACHBAR OBI

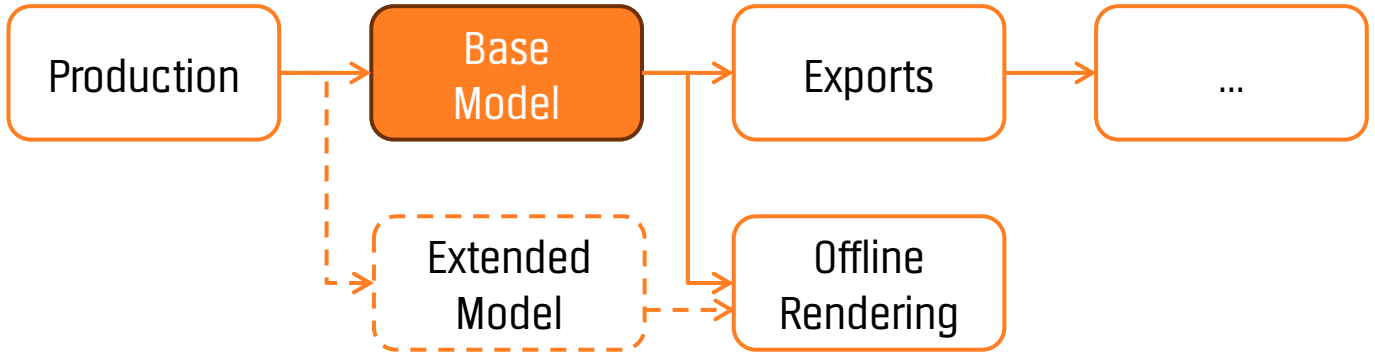
CHALLENGE ACCEPTED

Source: OBI

We defined a strict Base Model standard, striving for the most compatible feature set at highest quality

Approach

- Strict Base Model standards
  - Position and orientation
  - PBR Metallic/Rougness
  - Mesh quality
  - File and scene naming
  - etc.
- Additional "Extended" standard for flexibility



Challenges

- How to keep costs low?
- How to ensure standards?
- How to keep frustration level low?

Source: OBI

ALLES MACHBAR OBI

Introduction of Asset Guide and Asset Submitter plug-in helped to support and ensure Base standards

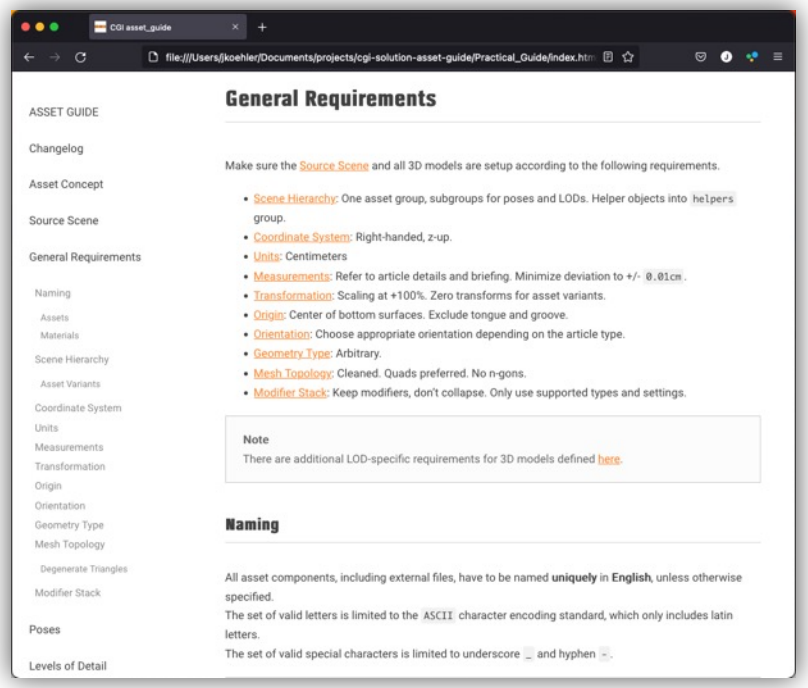
Approach

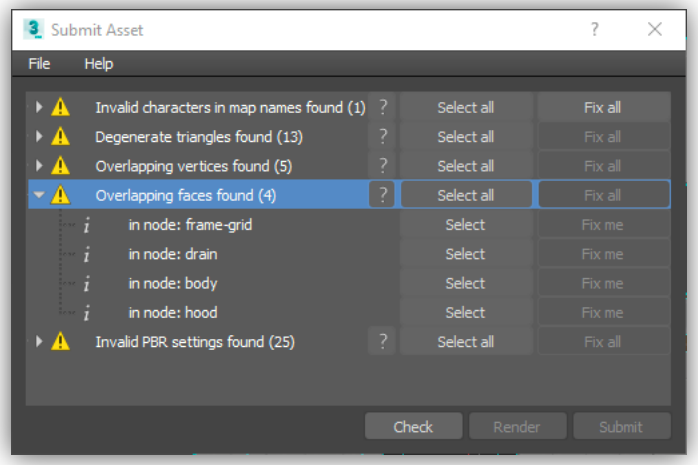
Asset Guide

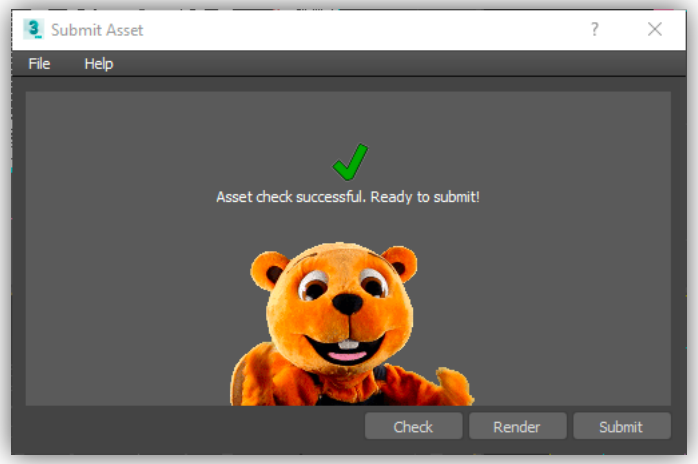
- Specification
- Guidance and explanation

Asset Submitter plug-in

- Check, fix, render, export
- Direct feedback
- Help linked to Asset Guide







Source: OBI

ALLES MACHBAR OBI

Rollout involved a higher production effort and a steep learning curve for designers, project managers and plug-in developers

Approach

Designers

- Restricted use of attributes and nodes
- PBR workflow
- Groups vs. layers
- Clean geometry

Developers

- Output Color Map implementation
- Slow xView checks

Project managers

- Adapt processes
- Growing standards

Mixing old & new

- Different post production
- White and black values
- Rebuild old scenes?

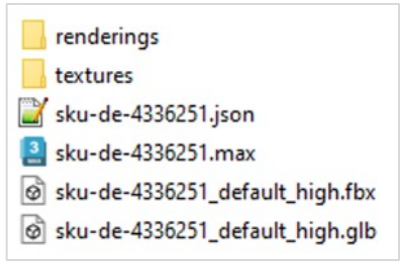
Source: OBI

The standardised exports of our Base Model to different formats opened the doors for nearly any further usage

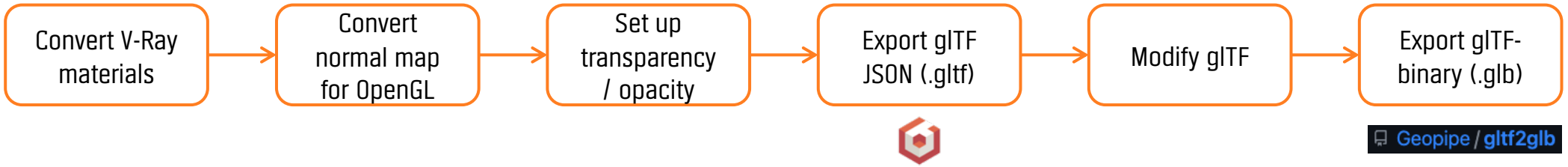
Approach

Exports

- Cleaned 3ds Max file
- Standardised renderings
- JSON with "metadata"
- FBX for external planner
- **glTF-binary for review, optimisation (and anything else…)**



glTF-binary Export Process



Evolving industry standards helped us managing to produce thousands of 3D models efficiently - ready for optimisation

Approach

- Evolving industry standards (glTF, USDZ, ...)
- V-Ray support for PBR Metallic workflow
- Khronos Asset Creation Guidelines
- Physical Material improvements
- PBR workflow tools and libraries
- Babylon.js plug-in for 3ds Max

READY TO BUILD A 3D PLANNING TOOL

Source: OBI

Agenda

1. Situation
2. Vision and Approach
3. **Use Case: 3D Planning Tool**
4. Q & A

Source: OBI

Web based terrace planning tool requires highly optimised and standardised 3D models at high numbers

Use Case: Planning Tool

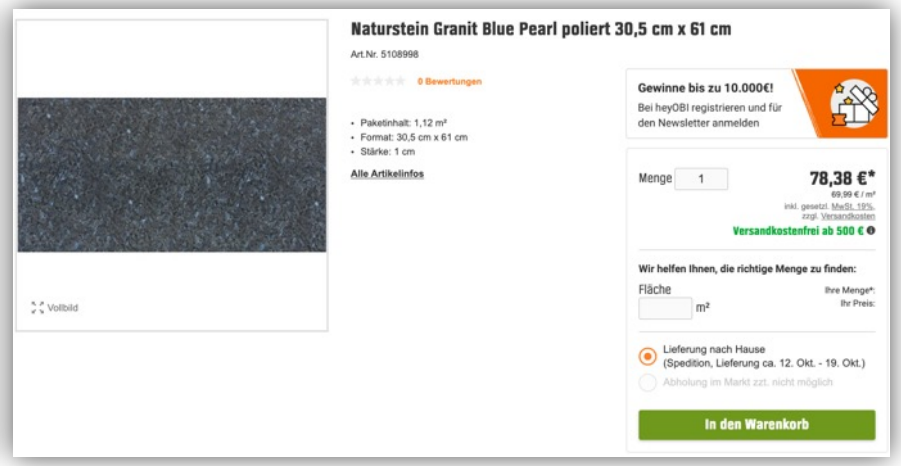
Challenges

- Web based 3D planning tool
- ~2000 relevant articles
- Hundreds of models in one project
- Consistent position and orientation
- Precise dimensions
- Sparse references
- Solo assets for cutting algorithm
- Pavement and gravel assets
- Long and thin objects with natural materials
- Terrace planks with two relevant sides

Laid-out

Solo

Product with different surface on each side



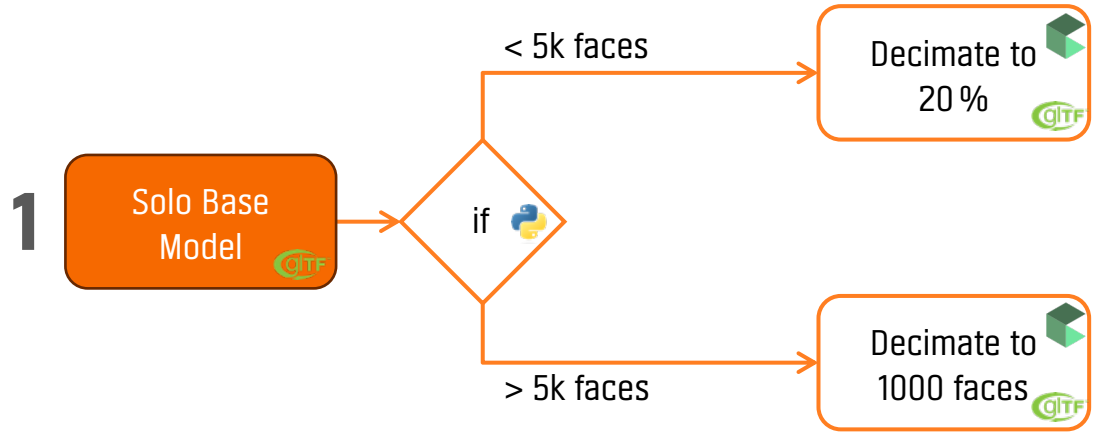
One reference image with basic measurements

Source: OBI

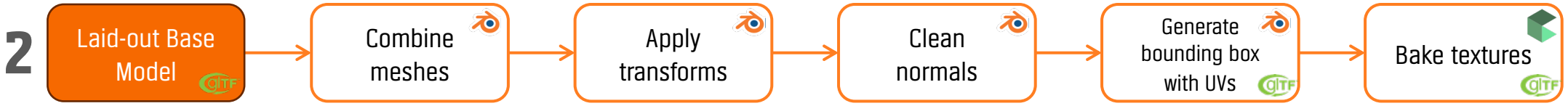
ALLES MACHBAR OBI

The preceding classification of 3D models and the usage of two different approaches provided consistent results of high quality

Use Case: Planning Tool



- Less than 1000 triangles
- ~1024 pixels/m
- 2048 x 2048 pixels max.
- Non-square textures?
- Ambient occlusion baking
- Normal baking
- JPG (no alpha needed)
- Draco compression
- RapidCompact CLI

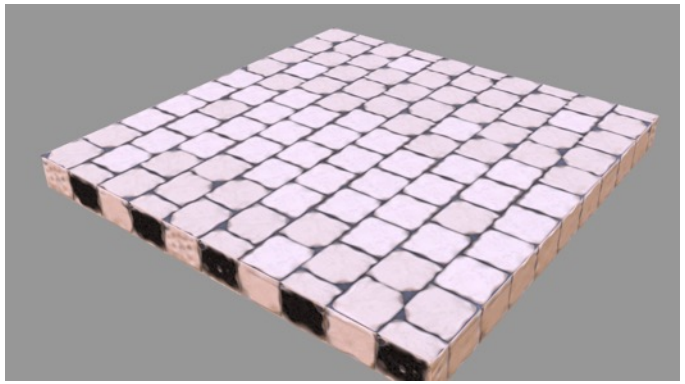


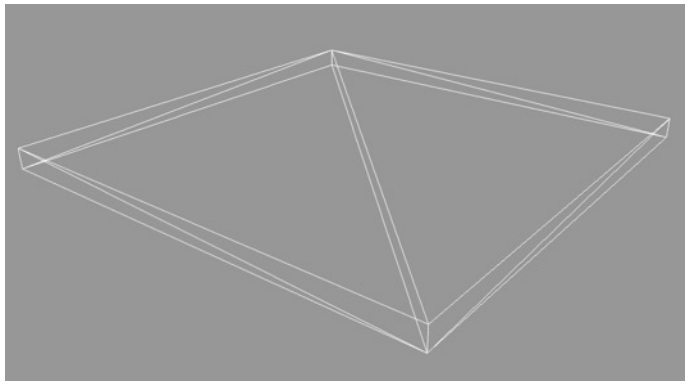
Source: OBI

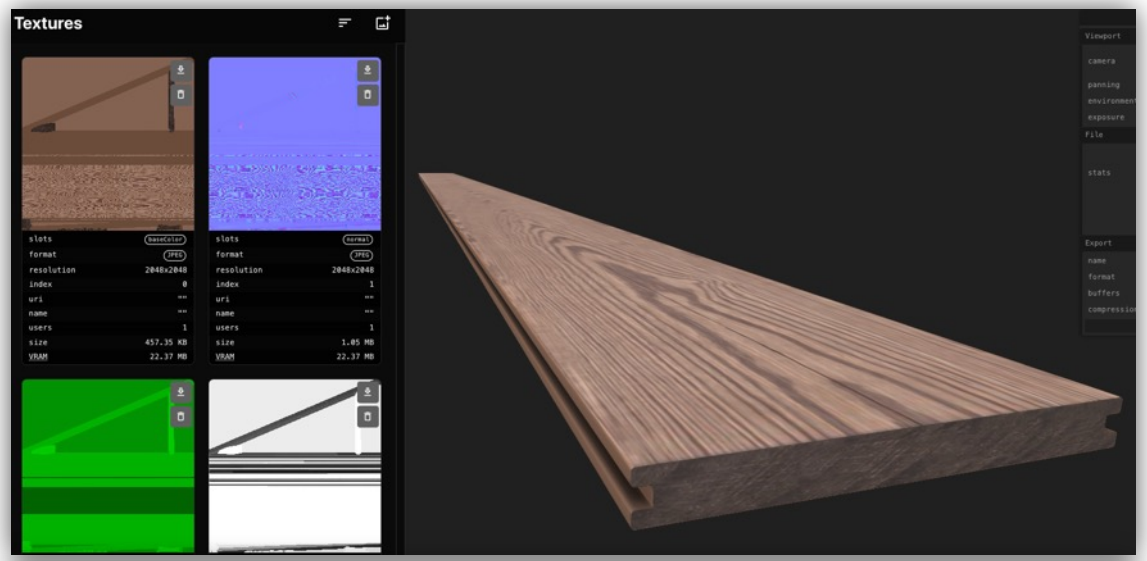
ALLES MACHBAR OBI

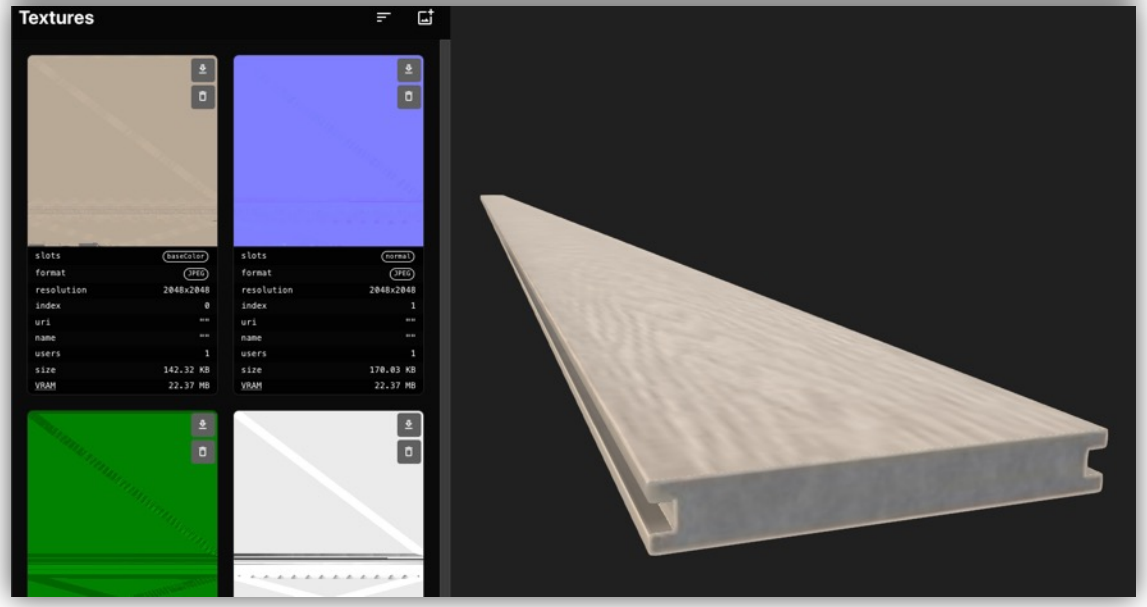
Results

Use Case: Planning Tool





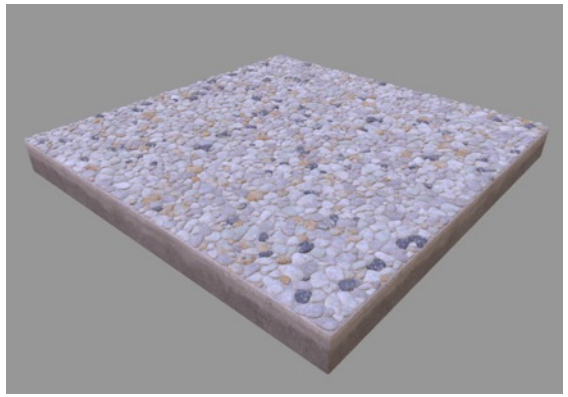


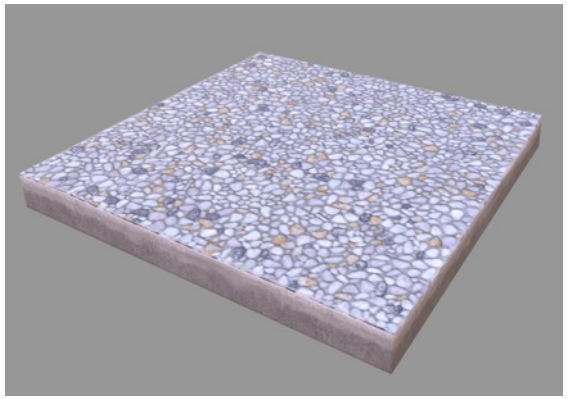


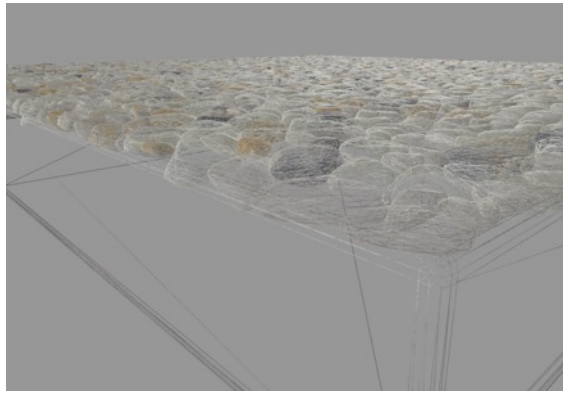
Source: OBI

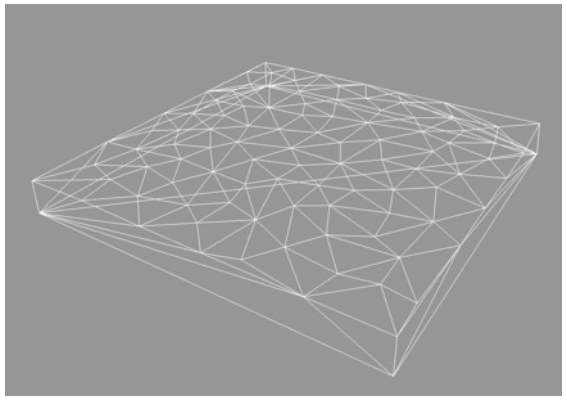
Results

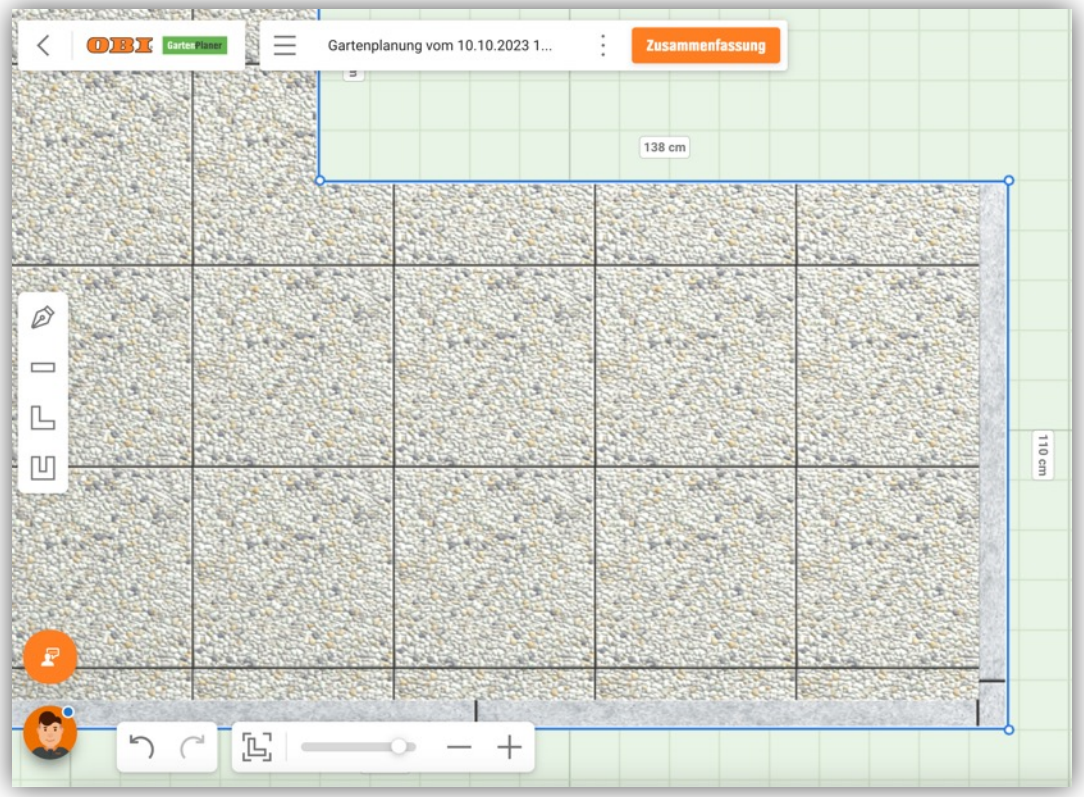
Use Case: Planning Tool











Source: OBI

Outlook: Optimising complex funitures for planning tool and more...

Use Case: Planning Tool

- **Garden furniture**
- Improve texture resolution
- Reduce special cases
- Texture variants
- Improve Base Model for baking
- Support material extensions
- Improve integration
- Plants
- Environments
- Provide terrace projects for AR
- ...

Source: OBI

ALLES MACHBAR OBI

THANK YOU

ALLES MACHBAR MIT OBI

Agenda

1. Situation
2. Vision and Approach
3. Use Case: 3D Planning Tool
4. Q & A

Source: OBI

Q & A

ALLES MACHBAR MIT OBI

ALLES
MACHBAR
MIT

OBI®