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Futuristic Interactive Technologies

# AI Design Space

Use Case 2: Architecture & Design
Necoverse final seminar – 17 Nov 2025

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# Why AI Design Space?

- There is a growing demand to design spaces that are **flexible**, able to **adapt** to different functions, and **sustainable** to facilitate needs of the future.

- Virtual desing space can offer Shared spatial context, maintained across sessions, All users see changes in real-time

**Collaborative Design Platform:**
- Remote teams designing together
- Breaking geographical barriers
- Democratizing design participation
- Inclusive and accessible design processes

**Fast Prototyping**
- From concept to visualization in minutes
- Time reduced from weeks to hours
- Cost-effective design exploration
- Risk-free experimentation

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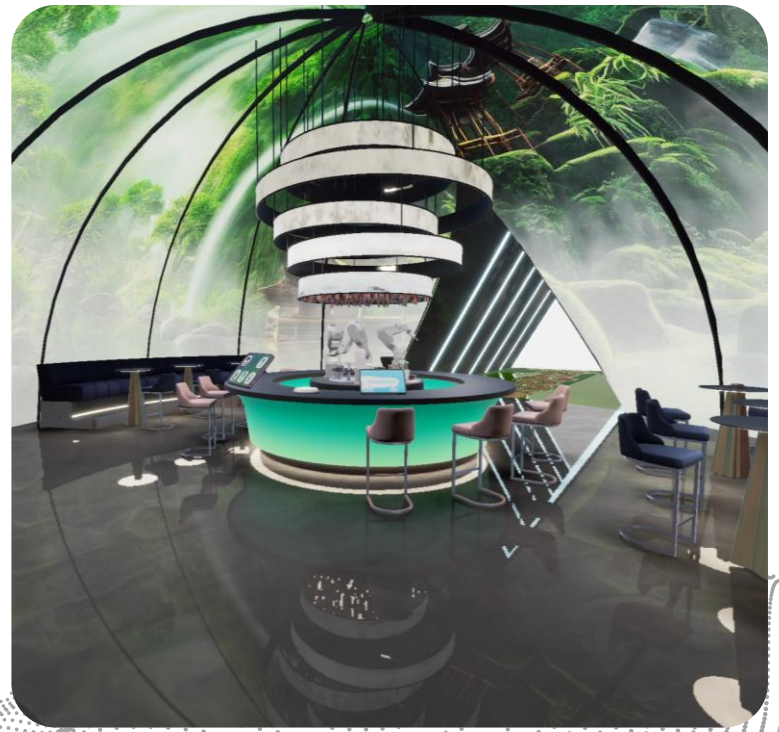
# Prototypes of collaborative design environments

Developed in collaboration with Vertti Kivi & Co.

Vertti&Co



## Real-time design changes

- Lighting
- Color of the furniture
- Ambient music
- Content of the digital screens

# Prototypes of collaborative design environments

These prototypes have their benefits, and also limitations

Fixed number of combinations

All content is premade

Requires manual setup

... That led us to question

## How could we maximize the creative freedom with generative ai?

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# What if we could design an entire space together by describing it out loud?

# What did we have?

Turku UAS metaverse collaborative platform

Use Cases

Large Language Models

AI Design Space

Advances in Hardware

Diffusion Models

Speech recognition

Virtual Reality

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# Design Space with generative AI

Platform that transforms spoken descriptions into virtual environment elements

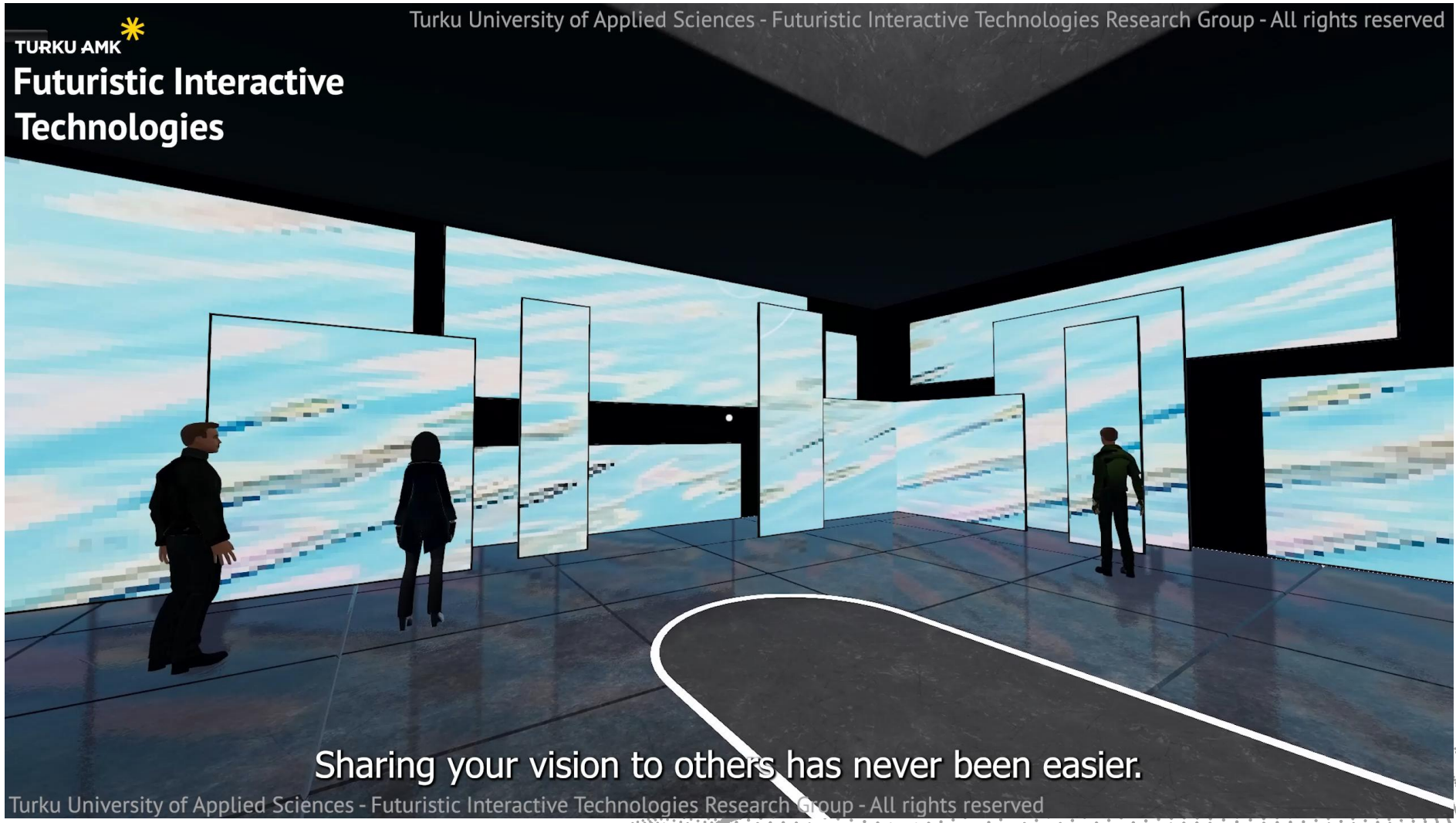
## Users

- Design the environment together
- Describe the theme that they want the environment to reflect, by speaking or writing

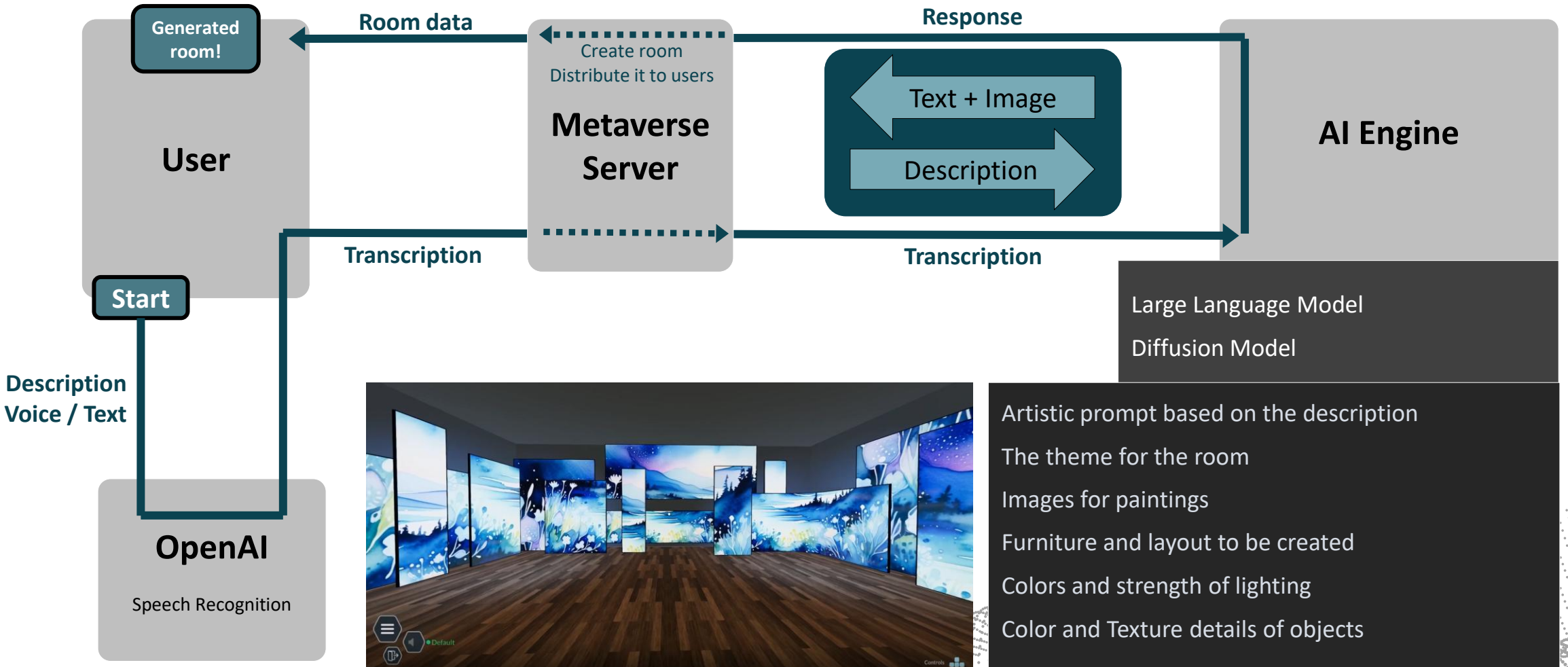
## System

- Listens to the users
- Generates images based on descriptions
- Projects the generated content into the virtual environment
- Adjusts lighting to match the generated theme

# Design Space with generative AI



# Design Space with generative AI



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# Onwards to all spatial dimensions!

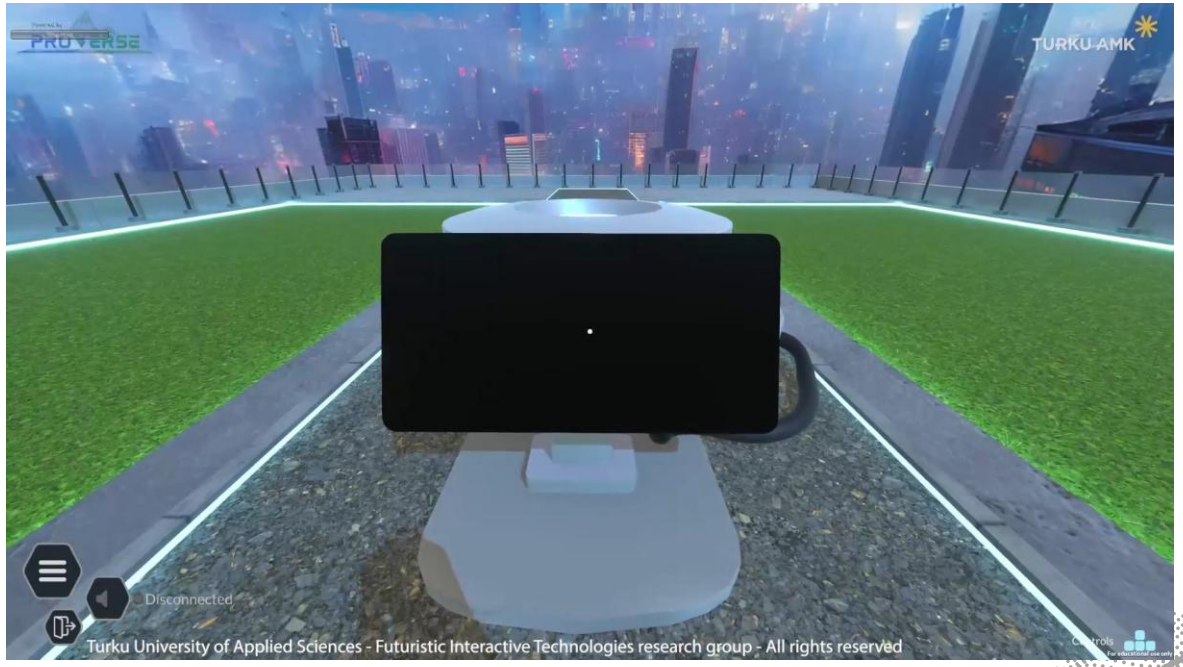
- Object Physics
- Turku UAS metaverse collaborative platform
- 3D generator Models
- Use Cases
- Large Language Models
- AI Design Space
- Advances in Hardware
- Diffusion Models
- Virtual Reality
- Speech recognition

# Generating 3D models

Users:
Design together in real-time
Speak or type to describe a theme (surrounding 360 environment)
Speak or type to describe any 3D object
Move and edit generated 3D objects in the scene

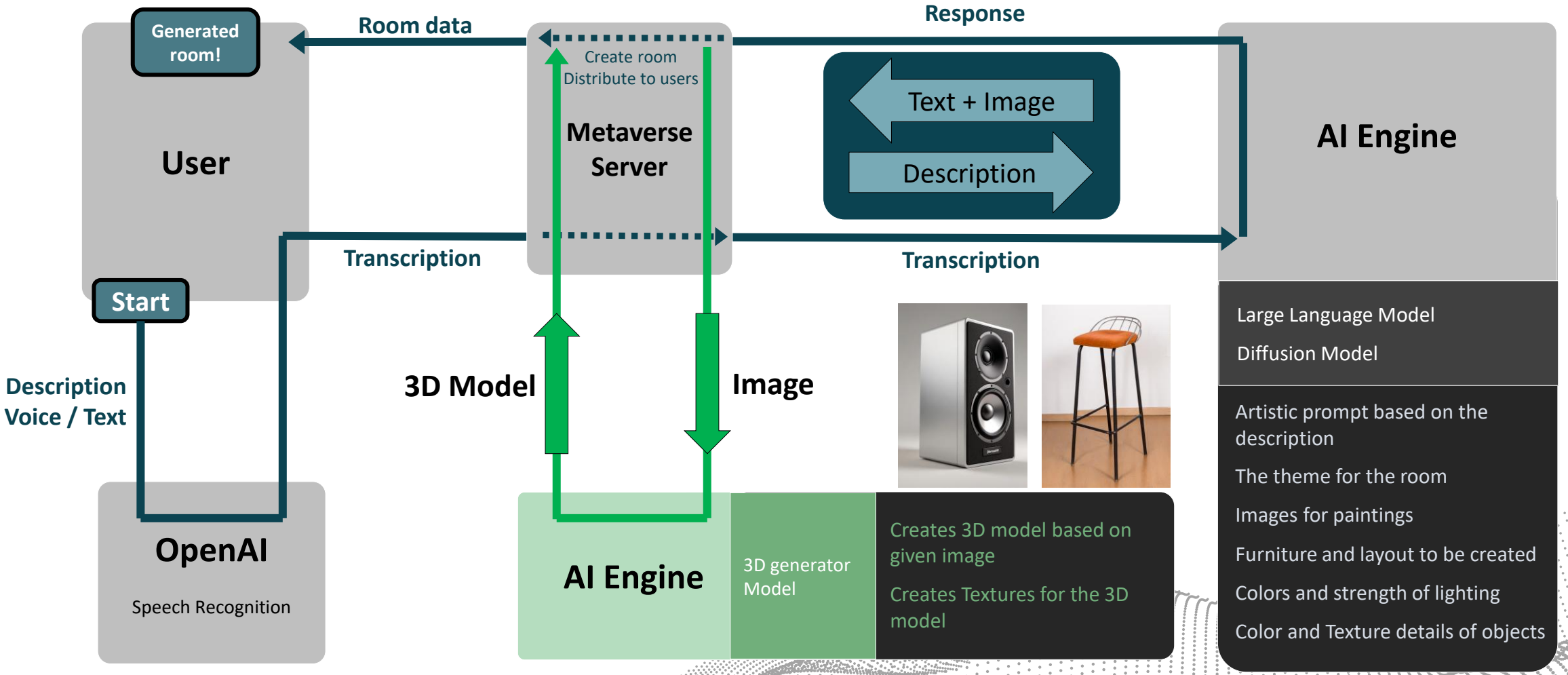
System:
Listen the users
Generate images and 3D models based on descriptions
Generates colliders to the 3D models

## Generating an object with spoken description




## Different use-cases

# Generating 3D models



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# Impact & future vision

*Collaboratively create anything*

- Rapidly receive feedback by bringing in the end customers
- Real-time spatial design
- Accelerate innovation in architecture and interior design
- Enable sustainability by digital design platform and rapid iteration in virtual reality
- New option for collaborative creativity

**New Use Cases and possibilities**

Education, workshops, architecture and design, engineering, arts, …

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# Impact & future vision

## *We are just getting started*

… and generative AI continues to develop at astonishing speed

- Expandable towards multimodal controls and sensory feedback
- Integration of AI Agents
- Semantic environment memory
- Generation and broadcasting volumetric data

Future roadmap: Real-time environment cloning in photorealistic quality as a basis for design

**Necoverse AI Design Space brings imagination into collaborative virtual reality — turning spoken ideas into living environments**

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# Co-designing session: A rooftop bar

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# Come and test AI Design Space today at our demo booth!

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# Thank you


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