MUSC – Multi User Space Conquest

We actually bring people to space

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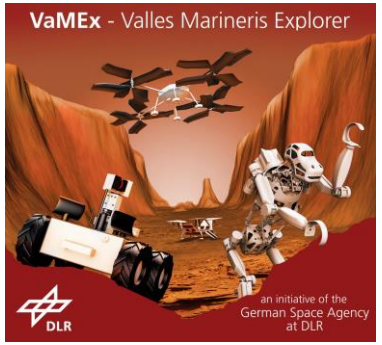
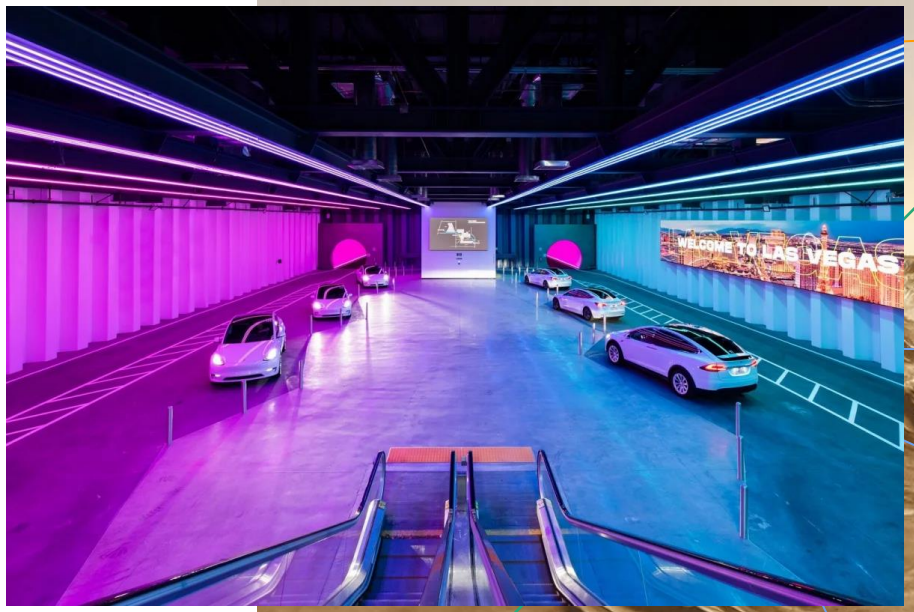
Abstract

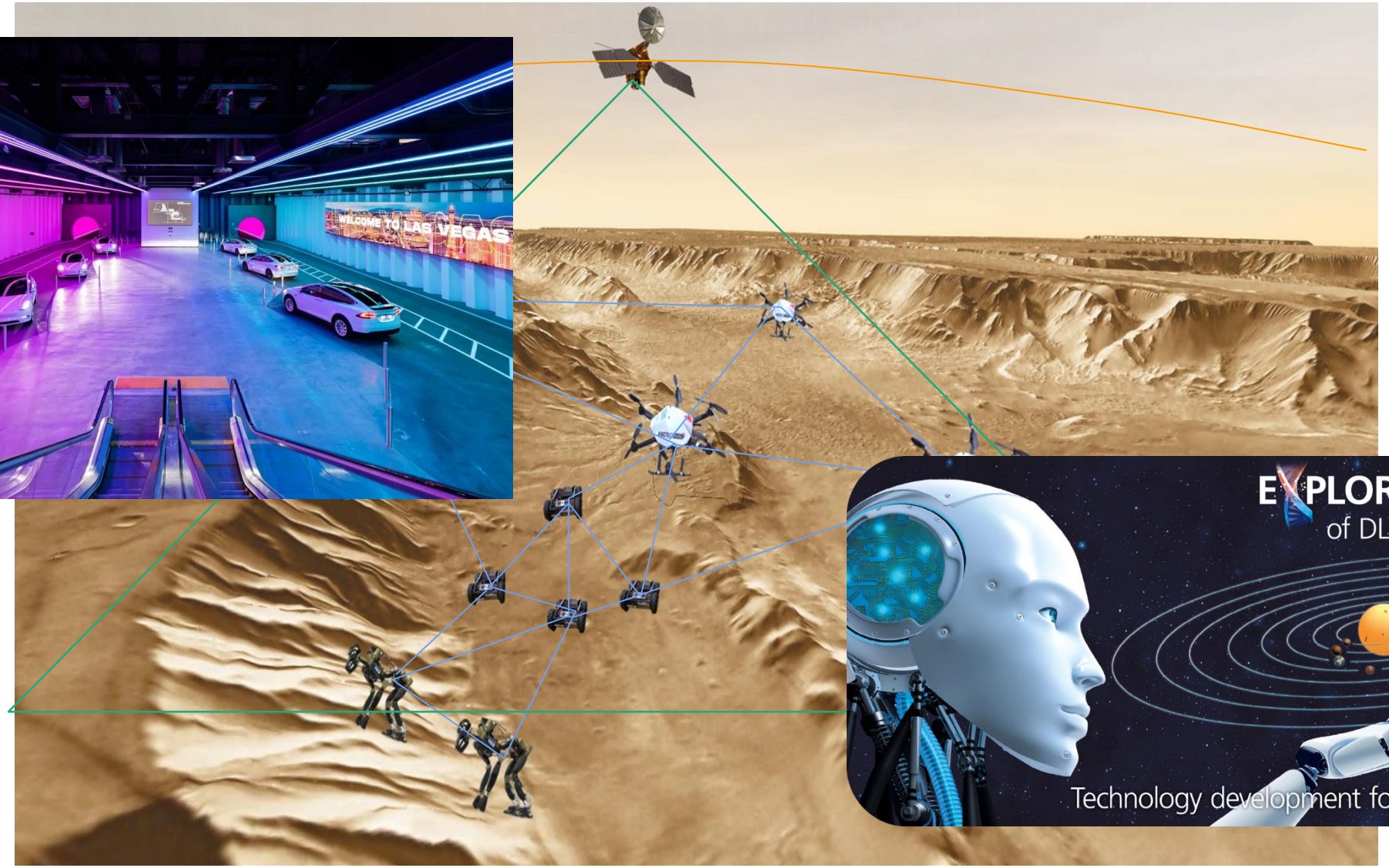
- Create a multi-user VR platform that enables a team of distributed space researchers to discuss and plan future space missions collaboratively
- Basis is an Unreal-Engine-5-based virtual testbed for a planned mission to the planet Mars
  - Including models of vehicles and realistic Mars terrain
- The project is related to an actual scientific research project funded by the German Space Agency (DLR) to plan a mission to investigate the Valles Marineris on planet Mars with a swarm of autonomous robots



Motivation: Mars 2050

Background: VaMEx-Initiative





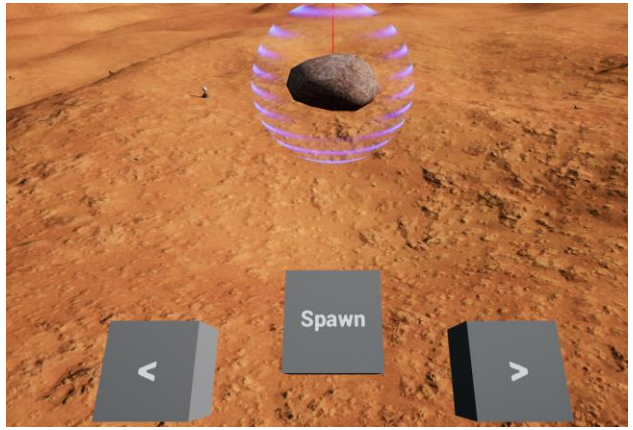
Background: Metaverse

Main Goal of the Project

- Create a highly immersive VaMEx-VTB Experience
  - Virtual Reality
  - Multi User
  - Interactive
- Stable, performant over large distances (via Internet)

Project Tasks

- Programming:
  - Multi User VR-Implementation in Unreal 5
  - Multi User VR navigation
  - Interactions with environment
    - Throwing rocks
    - Gravity gun
- Modelling:
  - Avatar modelling (MetaHuman)
  - Avatar animation
    - Full body mocap suit
    - Facial animation (?)
  - Terrain modelling and texturing
    - Based on actual Mars scans by the NASA



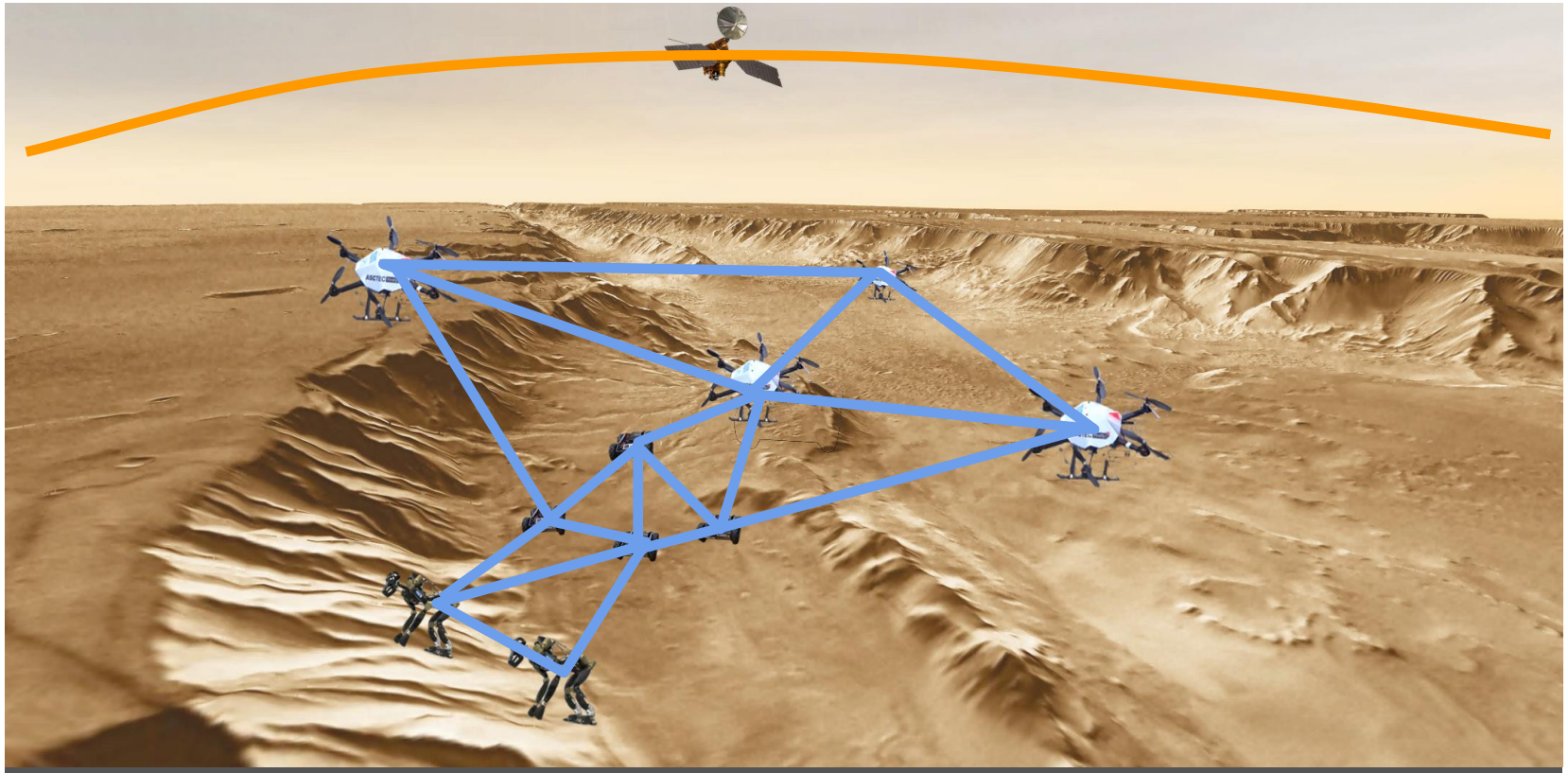
Project Infos

- This project is right for you, if
  - You study computer science, you know C++ and
    want to gain serious practice in computer graphics and VR programming
  - You study digital media and you are a creative mind
    with skills in 3D design & modelling (and/or 2D)
- If you like research & development in a space context
- Like to work with an interdisciplinary research team

Project Infos

- One-semester project (with regular work in our lab)
- Summer semester 2023
- Prerequisites:
  - A bit of computer graphics / 3D knowledge
    - E.g., from “Computer graphics” or “Virtual Reality” course
  - A bit of programming skills in C/C++ and/or modelling skills
- The envisioned project team: mix of CS & DM students
- Further info (Schnuppertermin):
  - Place: MZH 3590, 3rd floor, CGVR lab
  - Time: January 23 (Monday), 16:00
- Great opportunities for bachelor theses subsequently
- Language: German (except other requirements appear)

Ready to conquer new worlds with us?



Meet us Monday 23.1.
at MZH 3590, 3rd floor

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