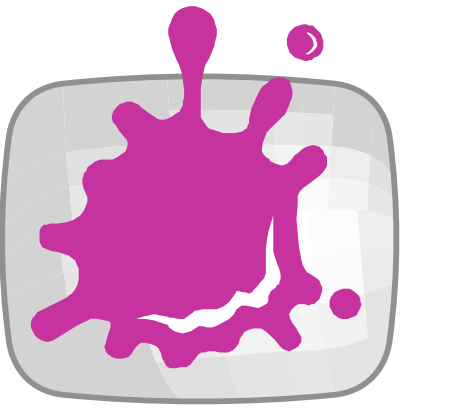FAKULTÄT FÜR !NFORMATIK
Faculty of Informatics

VR-Client for Scenario-based Response Training in Disaster Management

Masterstudium:
Visual Computing

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Dipl.-Ing. Harald Steinlechner

Visdom [1]

Fast Flood Simulation (Server)

Simulation Request Messages

Simulation Response Messages

Context: Computer simulations support decision makers in their planning process in disaster management. Virtual reality (VR) gives new possibilities for cost-efficient but immersive training environments.

Problem: The combination of two computational intensive application fields. Provide an interactive flood animation in VR. Provide interaction mechanisms to change the simulation progress and simulation parameters.

Research Question: How to combine these applications efficiently?

Method: Using existing software components that are optimized to perform their tasks (blue parts), and combining these (green part) to take advantage of each system's benefits.

VR Client

Scenario
Terrain — Lines
Water — Trees
Buildings — Barriers — Bridges

- Parse Binary Data
- Organize into Appropriate Data Structures
- Optimize Scene Graph per Data Structure
- Translate VR Interactions into Simulation Requests
- Control Simulation Time Progress
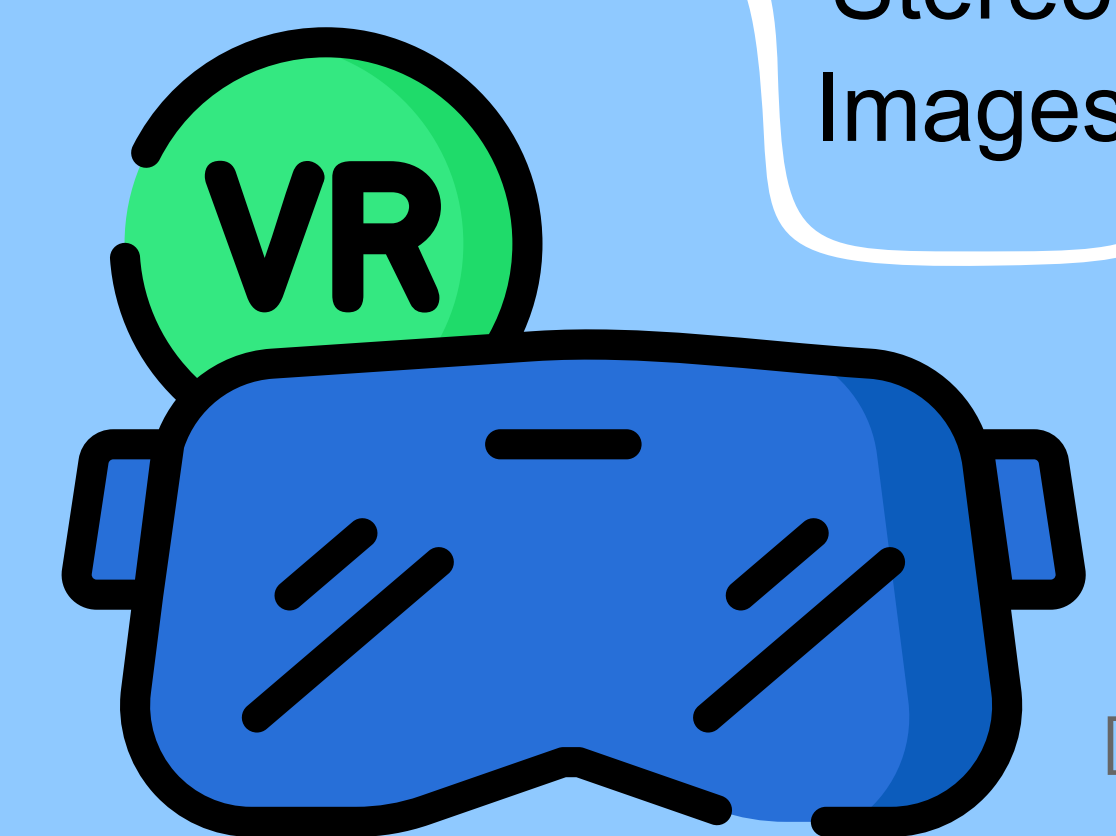- Control Visualized Scenarios
- Add Protection Mechanisms

State Change
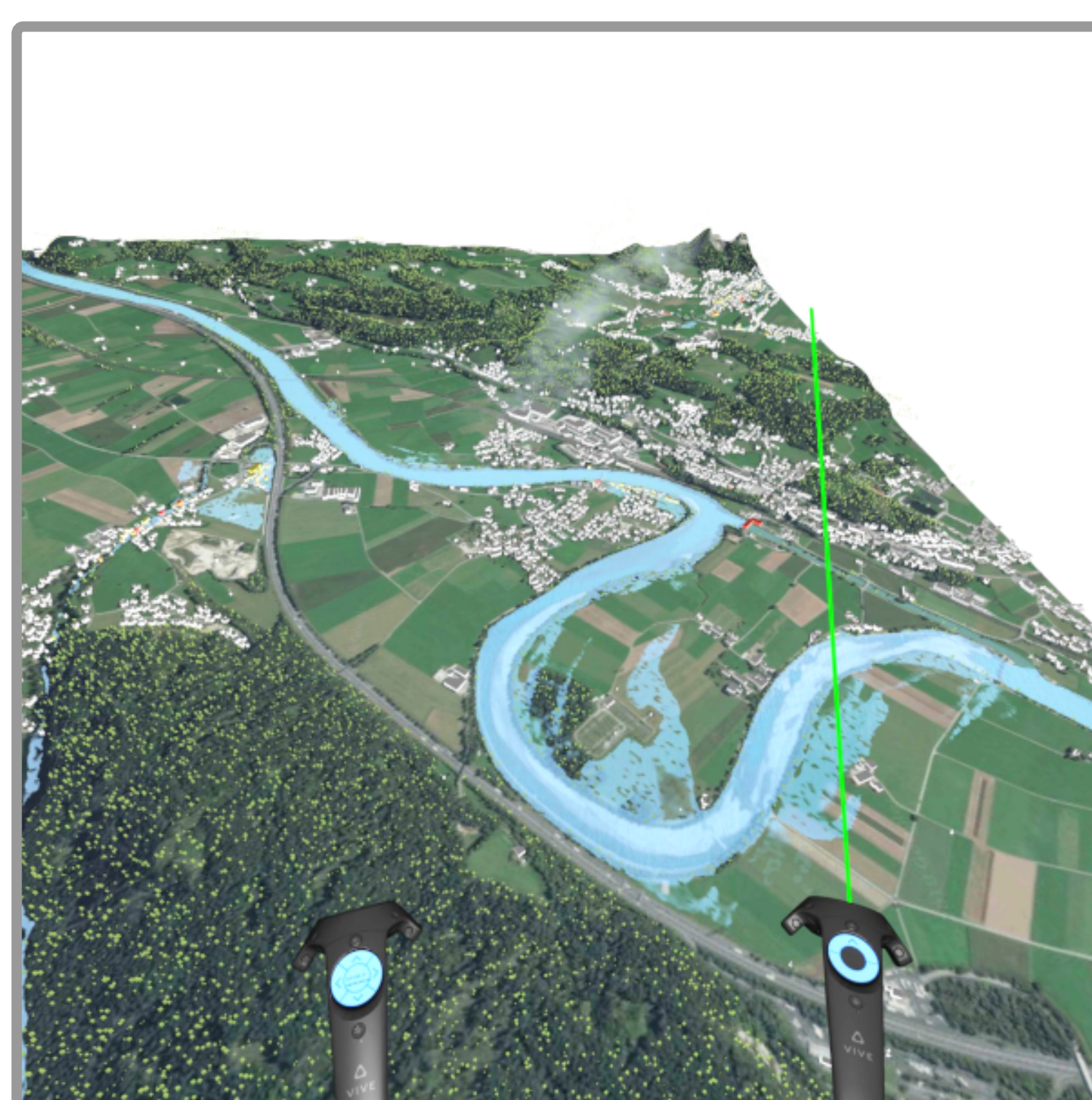
AARDVARK [2]
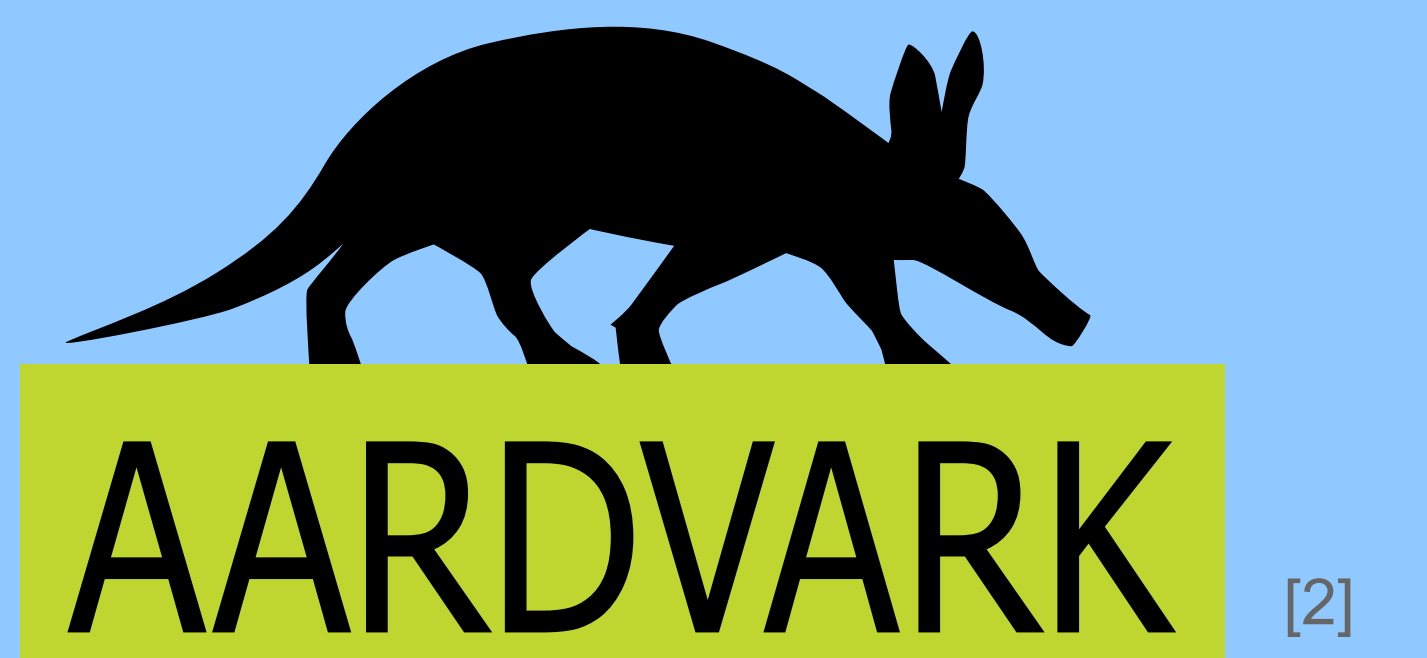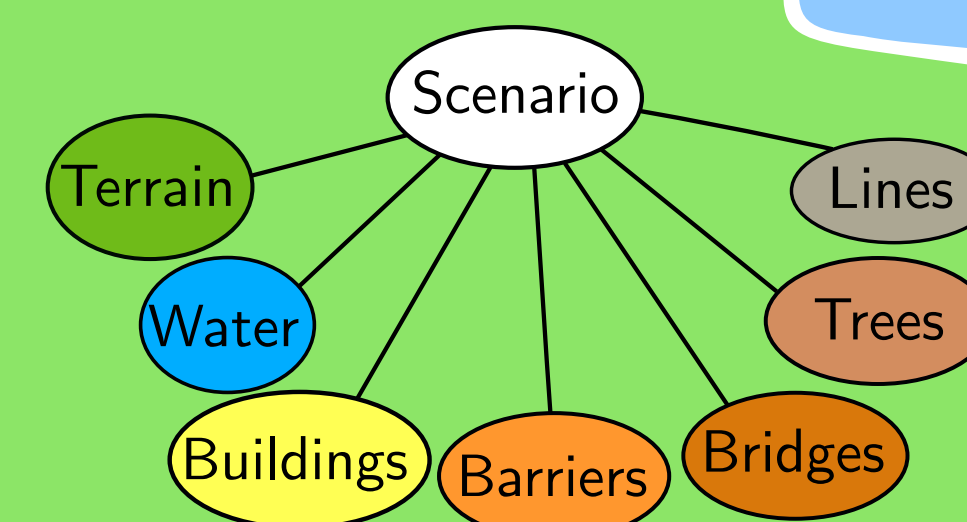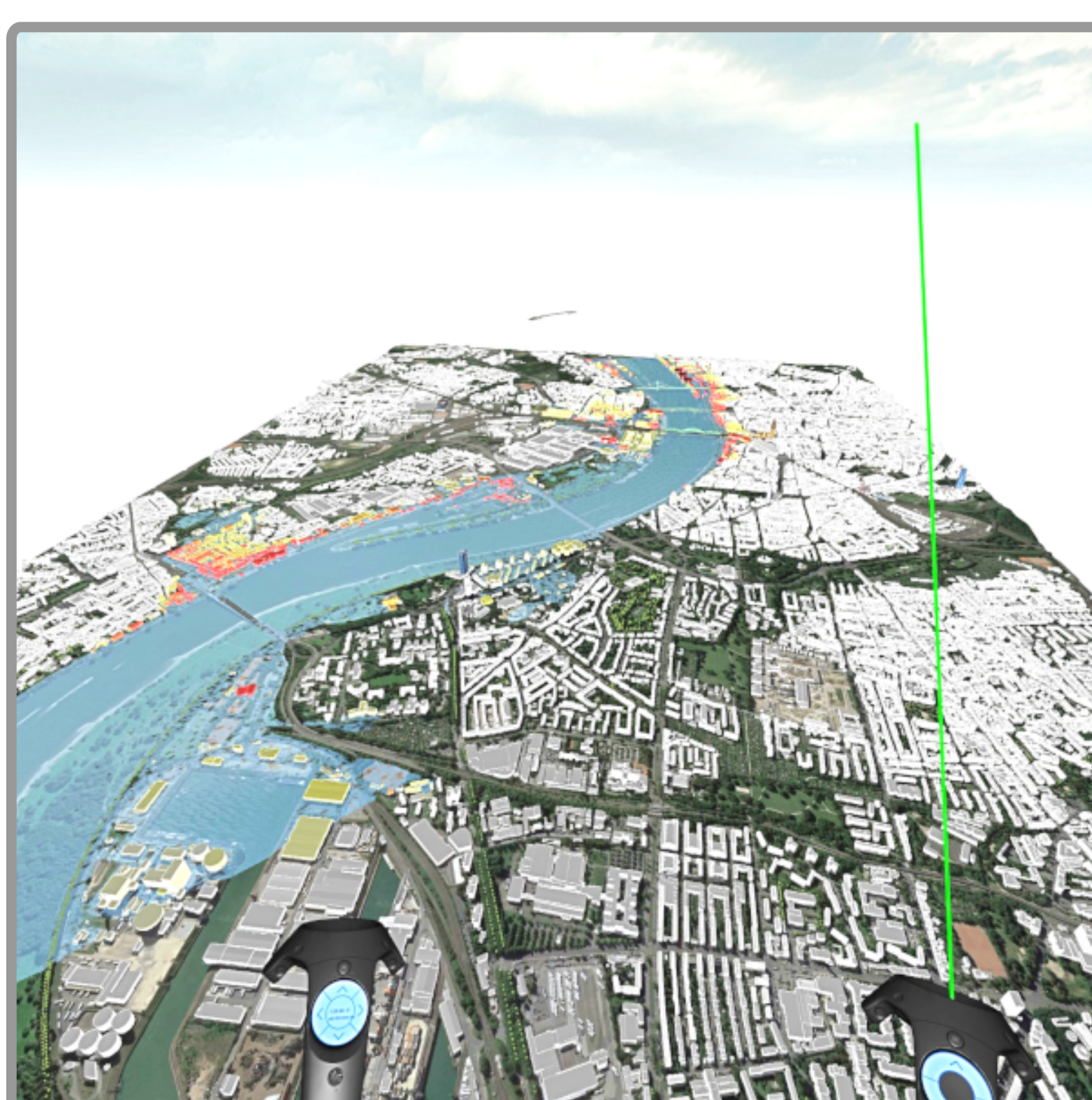
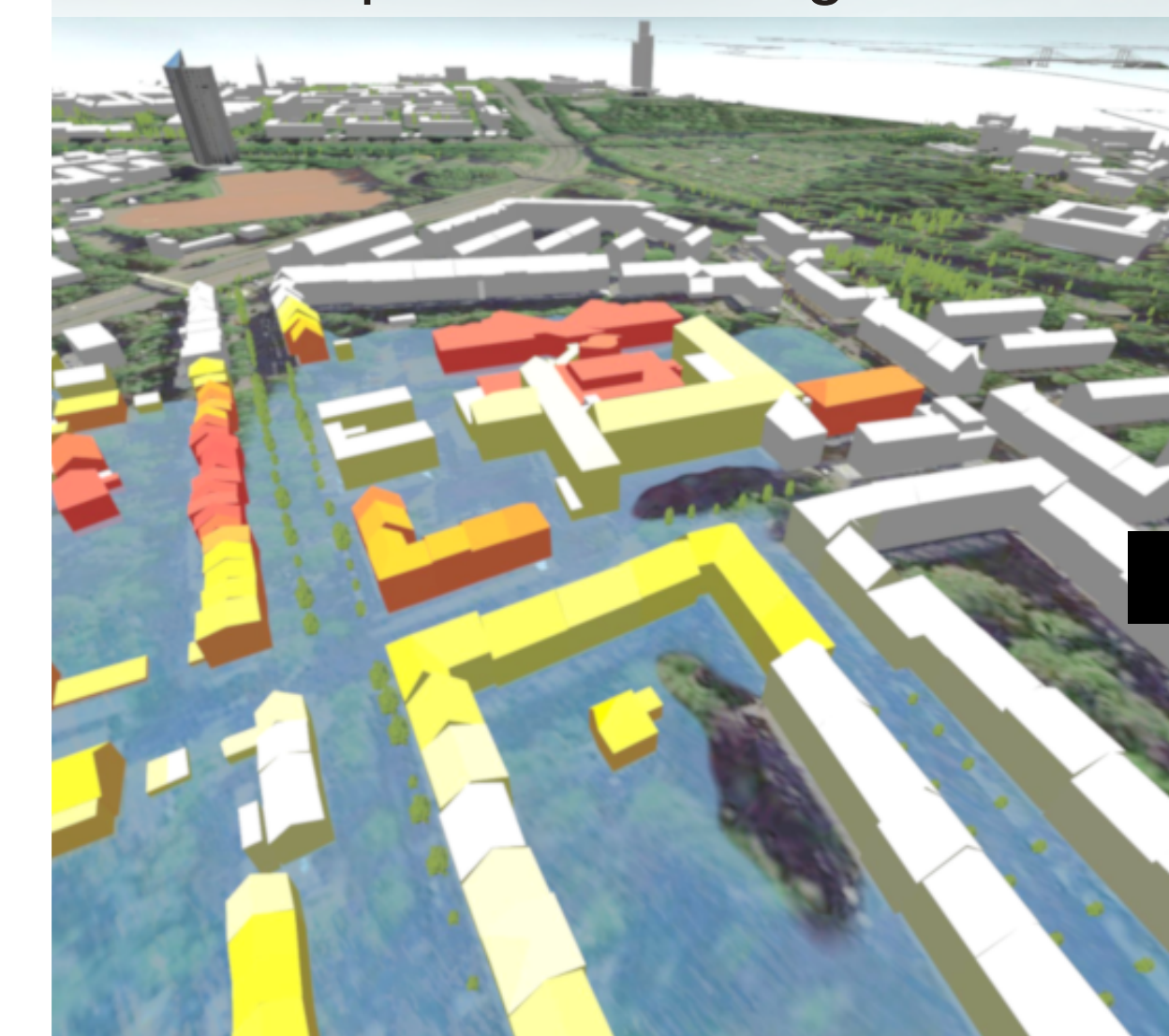**High Performance Rendering Engine**
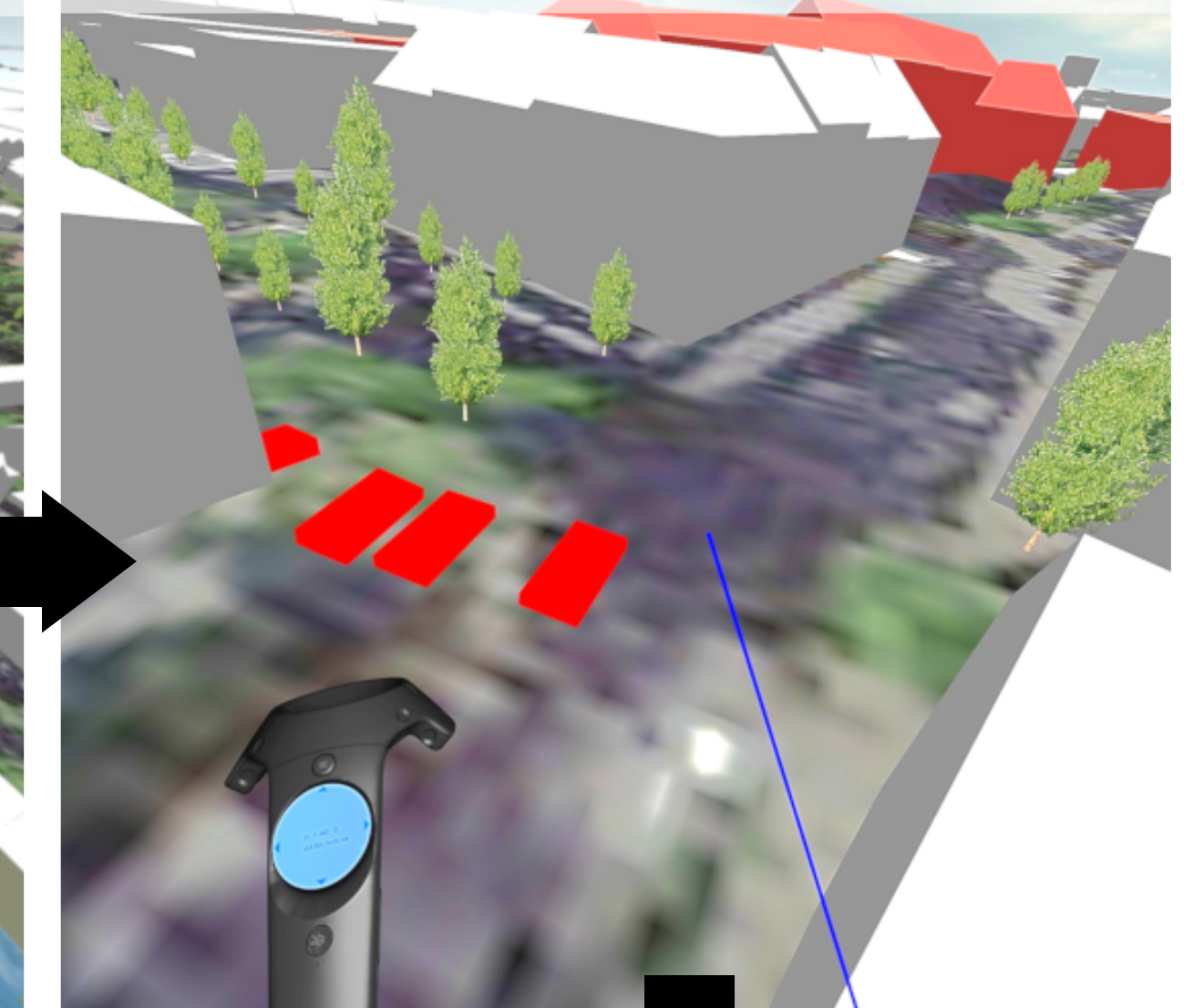
User Interaction

Stereo Images

VR

[3]

Application Results

Protect Important Building from Flood

Place a Barrier for Protection

Important Buiding Protected

Check Functionality of Placed Barrier