Immersive Wikipedia

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Background

The Virtual Reality and Visualization Research Group is developing systems for collaborative 3D data exploration and analysis, e.g. in the fields of:

Archaeology

Cultural Heritage

Design and Architecture

https://www.uni-weimar.de/de/medien/professuren/medieninformatik/vr/research/multi-user-virtual-reality/

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Motivation

Online VR applications allow us to meet in virtual environments.

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Users can explore the world together and get to know their environment.

Background Image: "Haus am Horn" by saiko (CC BY-SA 3.0)

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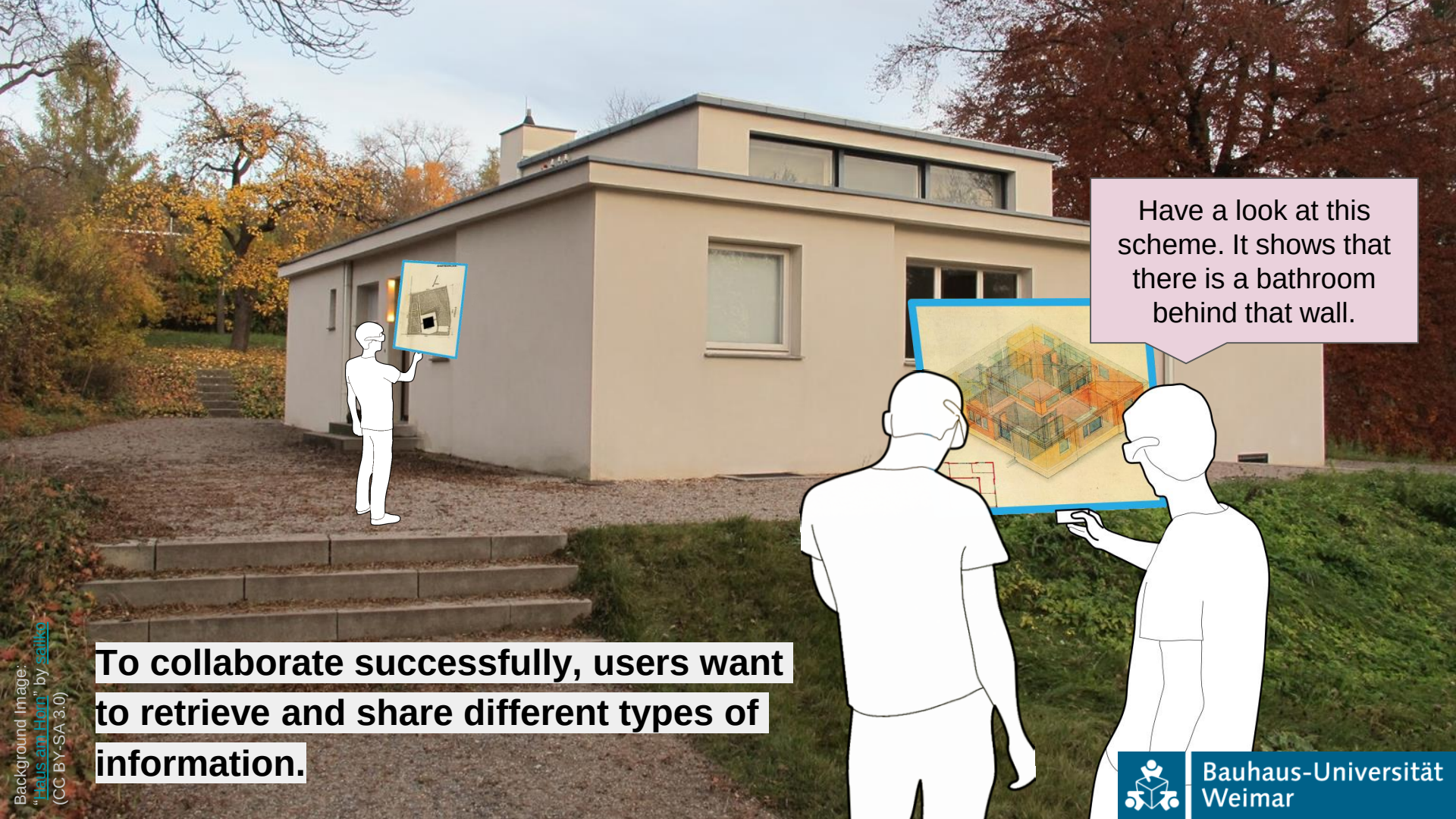

To collaborate successfully, users want to retrieve and share different types of information.

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We envision collaborative virtual environments, in which context-related information can be requested with natural language and smoothly embedded as well as directly exchanged and discussed with others.

Background Image:
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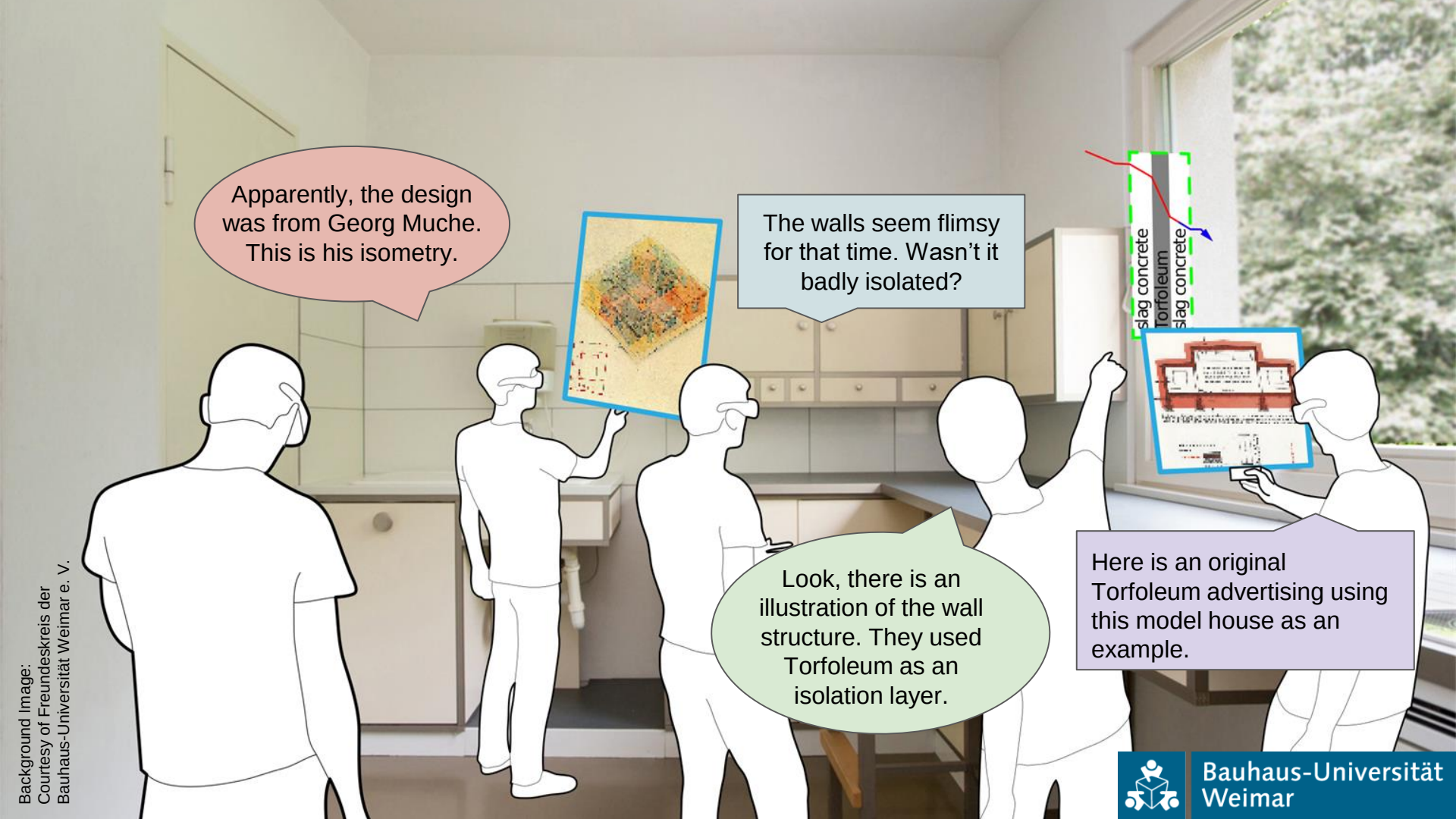
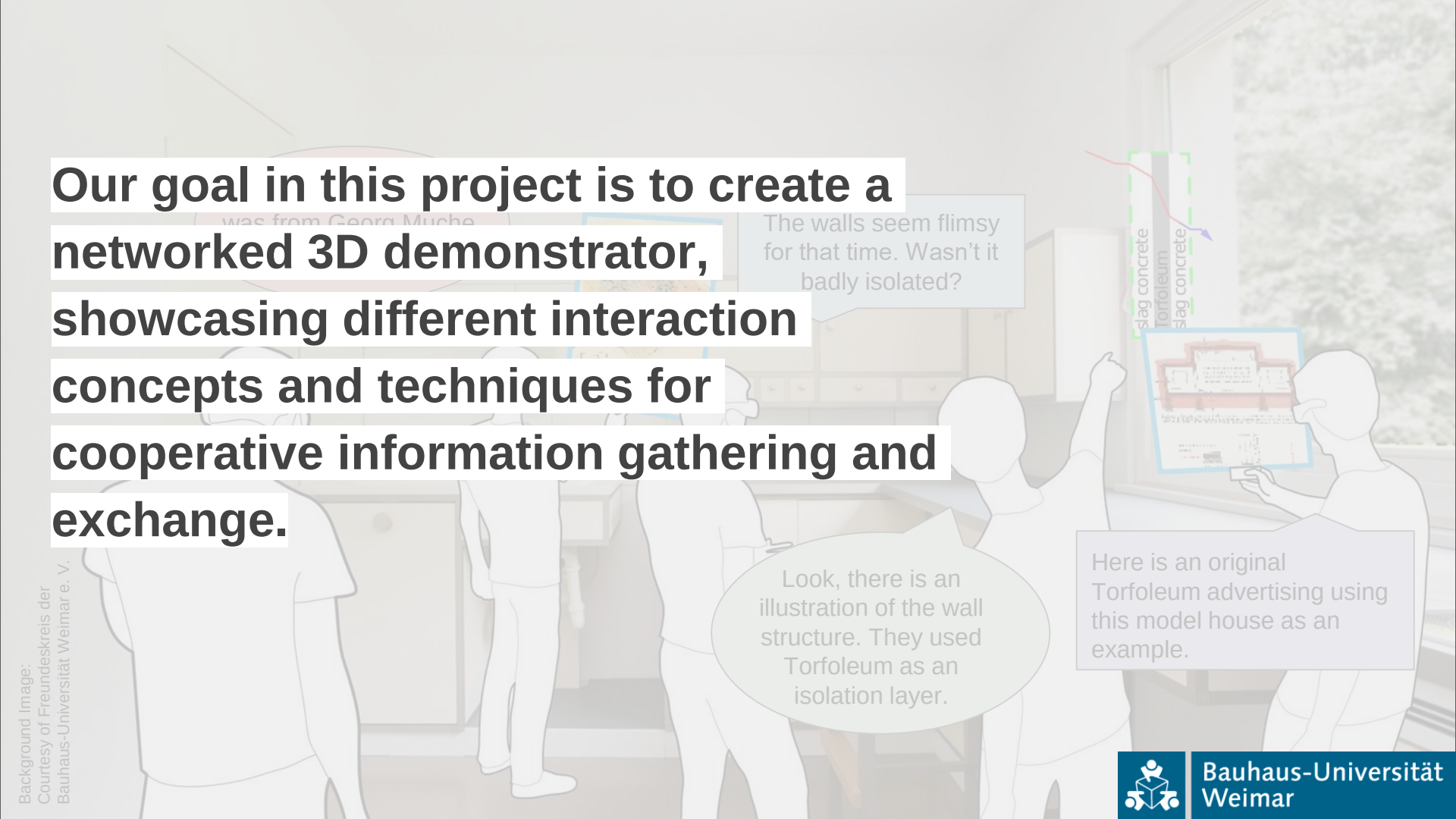


Our goal in this project is to create a networked 3D demonstrator, showcasing different interaction concepts and techniques for cooperative information gathering and exchange.



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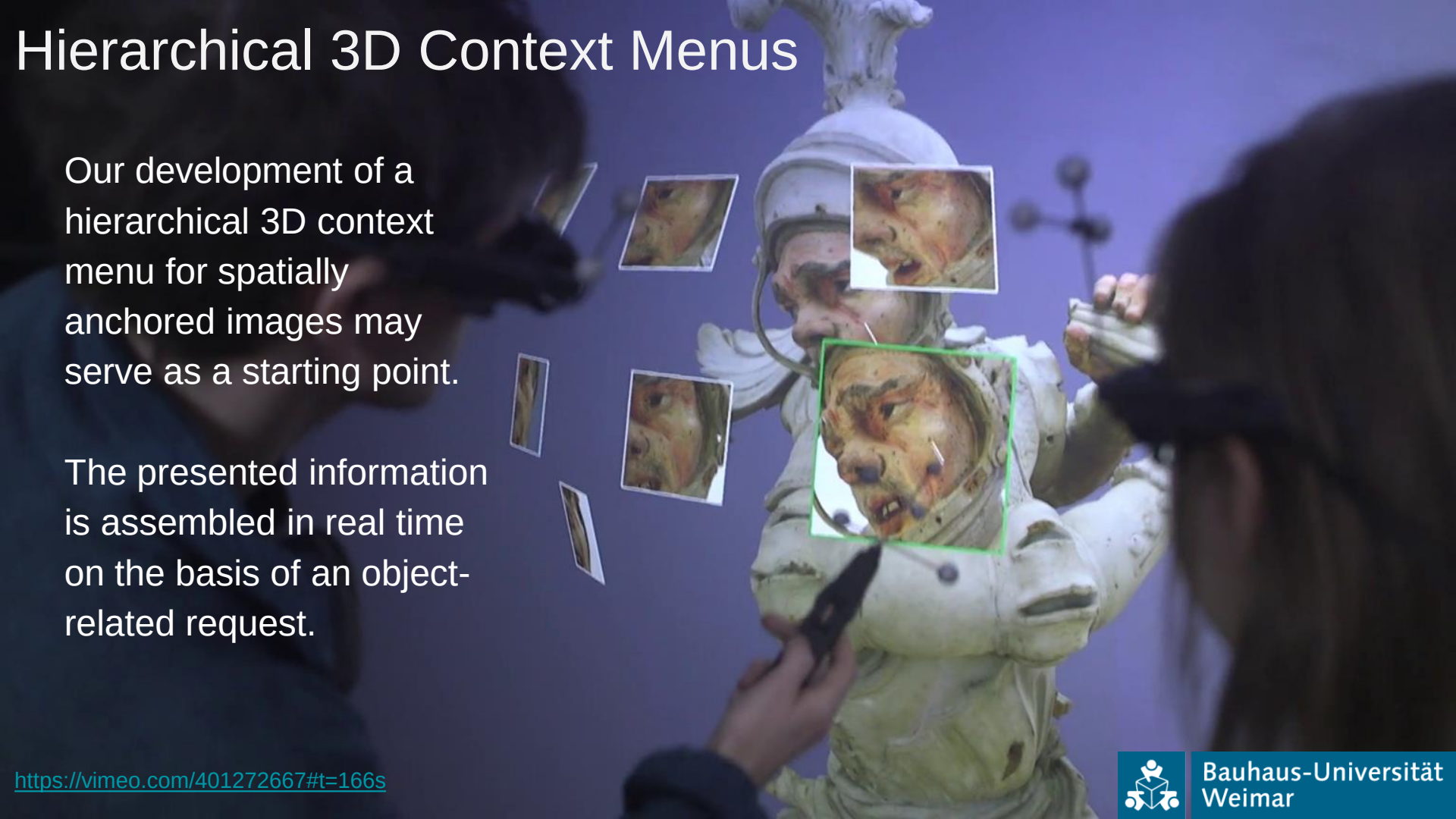
Hierarchical 3D Context Menus



Our development of a hierarchical 3D context menu for spatially anchored images may serve as a starting point.

The presented information is assembled in real time on the basis of an object-related request.

https://vimeo.com/401272667#t=166s

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State of the Art

Online VR applications like Mozilla Hubs support mutual exchange and the immediate integration of related (and unrelated) content form the web. However, the information cannot be semantically linked to features of the geometry. Effective interaction techniques for placing, requesting, showing, and the long-time management of such additional information are missing.

Project Structure

Frameworks: Unity3D, mozilla hubs
Programming languages: C#, JavaScript
Organisation: Slack, git, moodle

Assessment based on :

- Active project participation
- Intermediate presentations
- Development and prototyping of an interaction concept
- Documentation

Project Timeline

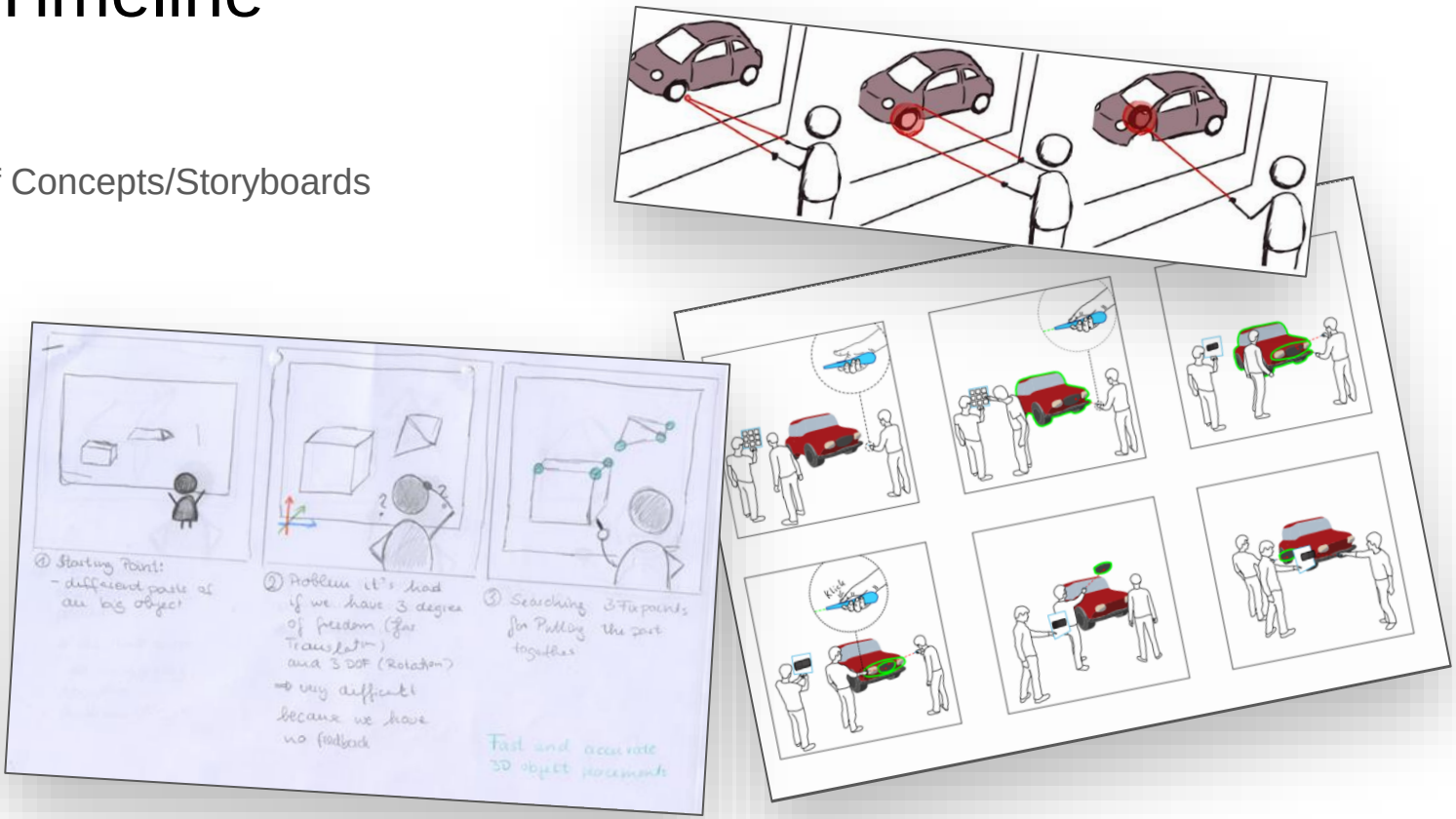
Step 1:

Requirement Analysis in Hubs

- How can we discuss virtual models in collaborative spaces?
- How can we embed additional information?
- Which features can we use?
- Which features do we miss?

Project Timeline

Step 2:
Development of Concepts/Storyboards



Requirement Analysis → Concept Development → ● → ● → ● → ● → ⚑

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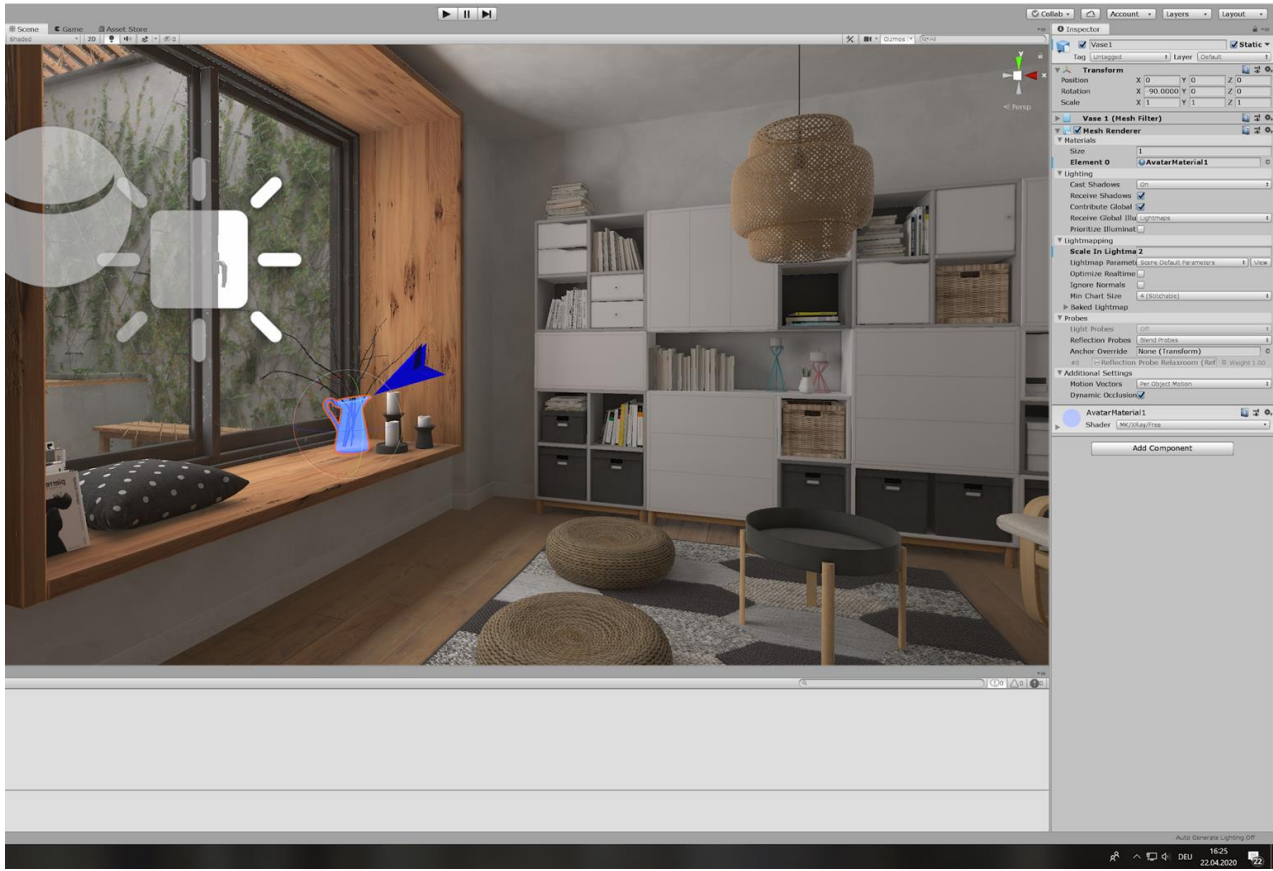
Project Timeline

Step 3:
Development of Unity prototypes



Requirement Analysis → Concept Development → Prototyping

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Project Timeline

Step 3:
Integration into a networked application

Requirement Analysis → Concept Development → Prototyping → Integration

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Participants

Participants overall (max.): 4

Study Programme	Max. Participants	Study Regulation	Credits
Medieninformatik (BSc)	4	all	15
Computer Science for Digital Media (MSc)	4	all	15
Computer Science and Media (MSc)	4	all	15
Human-Computer Interaction (MSc)	4	PV17 and lower PV19	15 12

Requirements

Helpful Foundations:

- Programming skills (e.g. successful completion of the “Programming Languages” course)
- Successful completion of the VR course
- Capability of working independently and in teams
- Unity and networking experience

Technical Requirements:

- Fast internet connection (must-have for distributed work in virtual environments)
- Access to a powerful computer with a graphics-card*

* Can be provided/loaned in Weimar if necessary

Project Goals

- Fundamental implementation skills in Unity3D
- Development of novel interaction concepts and techniques for context-related information gathering in collaborative VR
- Implementation and evaluation of novel interaction techniques in online virtual environments
- Development of a multiplayer VR-demonstrator of all suggested interaction techniques