

VR Interface for smart home system

A smart home system with sensors and actors is installed at our chair. It shall be visualized in AR and VR. For this purpose, different tools and frameworks are in use and available. The goal is to connect the data gained from sensors and actors with a virtual representation of our chair. Figure 1 shows a schema of the desired system part.

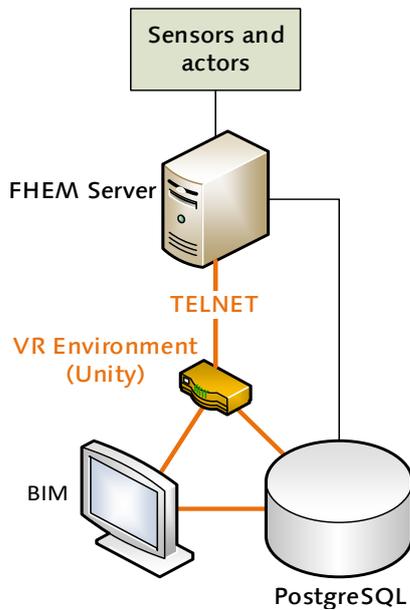


Figure 1: Contributors in the system

Virtual reality is an actual concepts mainly for games actually. We want to analyze it's opportunities for education. Is the information gained from a virtual reality (VR) scenario different than from augmented reality (AR)? What are the differences between them in experienceing and learning? How can we use VR for future classes to improve teaching? For this purpose we've got a VR-System (HTC Vive), for which a VR-App shall be developed.

The FHEM server represents the smart home system. It manages all devices and logs data into the PostgreSQL database. The connection between the sensors and actors works via radio-communication at 868 MHz. Every sensor and actor has multiple channels, i.e. actual temperature, temperature setpoint, humidity, low battery, valve state and so on.

FHEM pushes all data into the PostgrSQL server. There they stay persistent. It can be used to create graphs with progress, mean values and so on.

Figure 2 shows the use cases: walking through the virtual model of our Chair, get the actual data, control the actors and view some progress data from the database. This use cases shall be used inform people about energy consumption, heating processes, air flow and environment awareness.

This work is the basement for a later connection with a simulation tool.

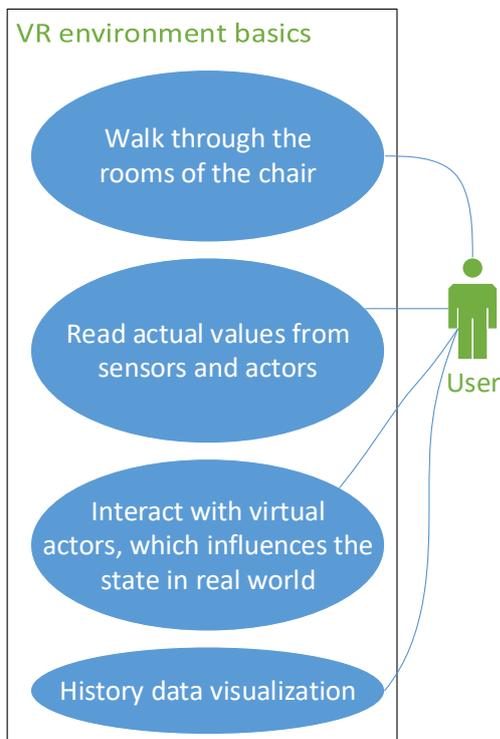


Figure 2: Use cases