IBPSA Project 1

International Building Performance Simulation Association

New and upcoming developments BuildingSystems library

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Web Meeting, 7/12 May 2021

Interactive Virtual Reality environment for indoor climate simulation

Objectives

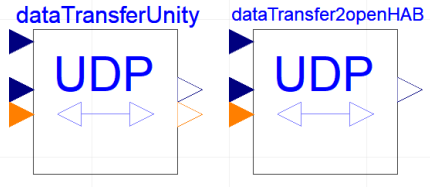
- Immersive user integration in an interactive VR simulation environment
- Physical feedback for users of simulated model states
  → e.g., reproduction of the simulated indoor air temperature in a space
- Real-time coupling of Modelica models with Unity → 3D visualization and with openHAB → control of (air conditioning) devices

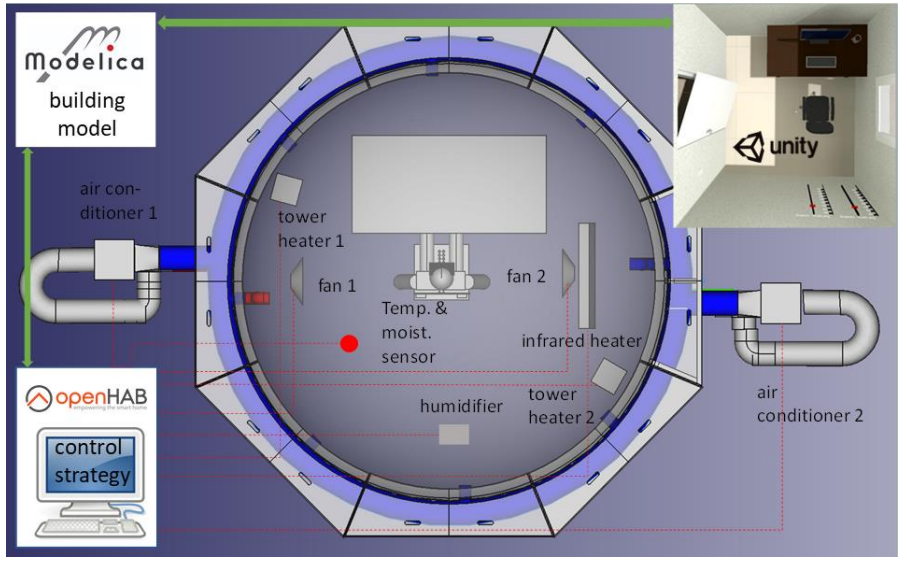
Software technology

- Real-time data exchange building models ↔ Unity:
  → C# wrapper for UDP interface of Modelica_DeviceDrivers library
- Real-time data exchange building models ↔ openHAB:
  → Python wrapper for UDP interface of Modelica_DeviceDrivers library

Library extension

- Generalized data exchange component based on the Modelica_DeviceDrivers library





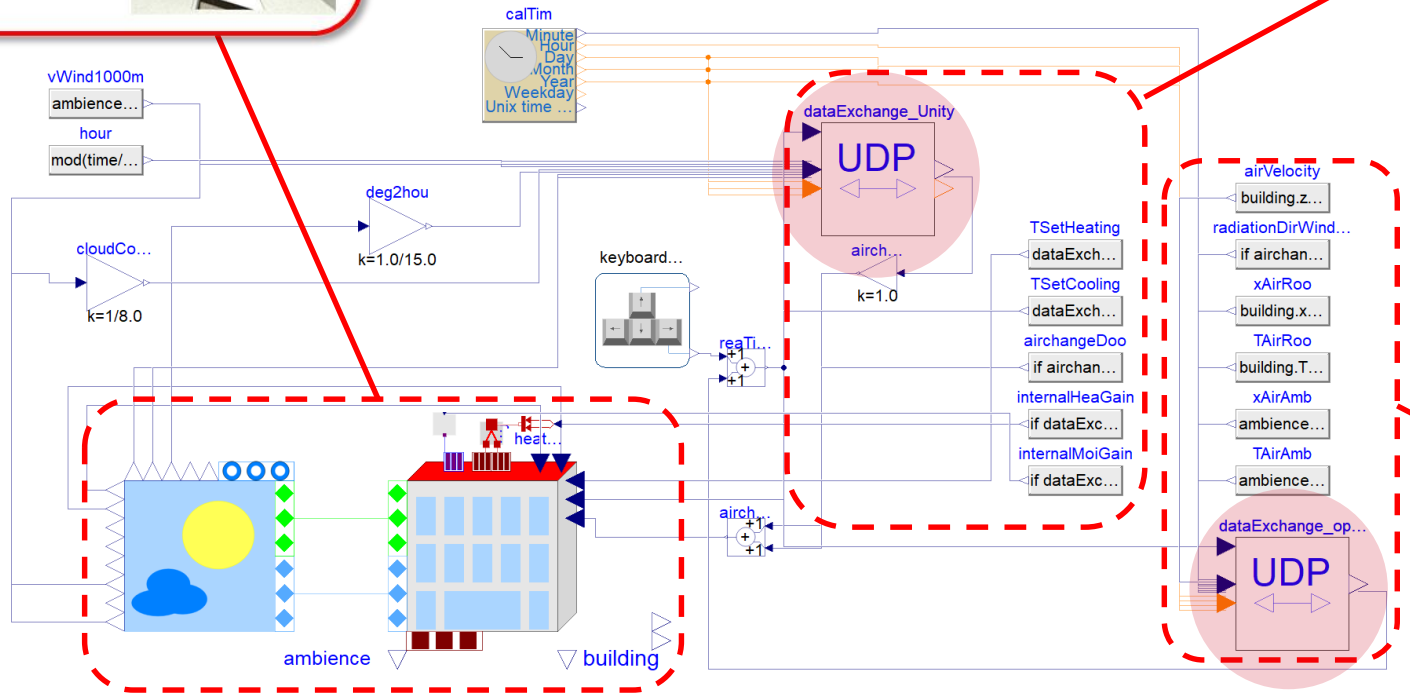
Test bed of a VR simulation environment with physical feedback for the user

Interactive Virtual Reality environment for indoor climate simulation

Outdoor climate & building model

unity

User interactions
- opening window/door
- thermostat heating/cooling
- user presence



openHAB empowering the smart home

1. building model states
- air temperature
- air moisture

2. reproduction of model states with AC devices

Contact

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