

Implementation of a Home Automation Service

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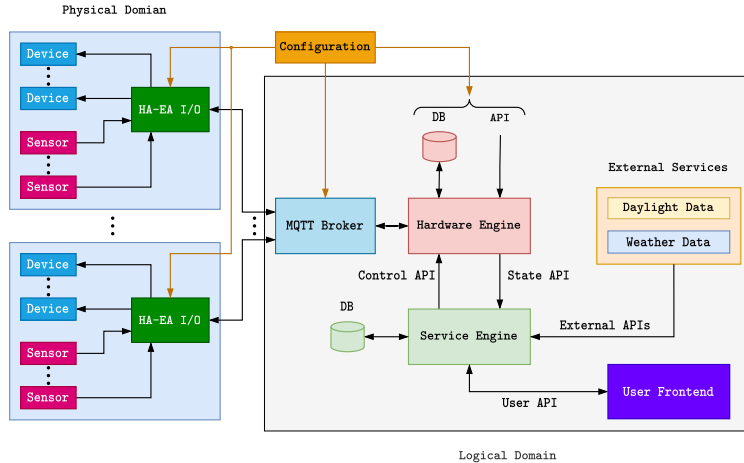
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 - User Story
 - Demo

Aim and Motivation

- Pre-existing network-enabled hardware I/O modules
- General purpose inputs and outputs
- Sensor BUS
- Building a smart service to control the hardware modules

Components



- Physical domain
 - Devices to control
 - Hardware I/O modules
- Logical domain
 - MQTT Broker
 - Hardware Engine
 - Service Engine
 - External Services
 - User Frontend

- Communication Protocols
 - MQTT for communicating with hardware
 - HTTP - REST
- Programming Language and Frameworks
 - Python 3
 - Flask
- Deployment - Docker:
 - MQTT Broker
 - Hardware Engine
 - Service Engine and User Frontend

- We want to control the temperature of a room
- An electrical valve is used to control the warm water flow of the radiators
- A temperature sensor is used for temperature feedback
- The sensor and the valve are connected to the I/O module

The user sets the following in the user interface:

- A target temperature (e.g. 21°C)
- A time interval when heating should be done (e.g 08:00 - 20:00)
- The weather conditions (e.g. not sunny, outdoor temperature $< 5^{\circ}\text{C}$)

- Service Engine API
- Graphical user interface
- Demo: Switching the light

Thank you!
☐ Questions?