Switchit!

A PERSONALIZED HOME-AUTOMATISATION-SYSTEM

CONTROL YOUR DEVICES FROM EVERYWHERE

CREATE CUSTOM PROGRAMS FOR YOUR HOME

GATHER INFORMATION ABOUT YOUR HOME-ENVIRONMENT

REAL-TIME & ENERGY ADAPTATION

- Challenge
  - Provide the user with real time information about his appliances, by using as less energy as possible

- Context:
  - User wants to save energy all the time

- Adaptation:
  - While opening the SwitchIt-App the Smartphone is loading the latest values from the database
  - Then it subscribes the specific topic from the REST-API
  - Server sends push notifications to the client, when new changes are available
  - Reduce the sending interval of battery-powered sensors to save energy (interval: 3s)
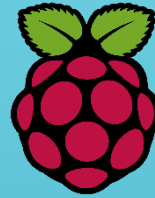
BANDWIDTH & DATAVOLUME ADAPTATION

- Challenge
  - Reduce the amount of data to be transferred to minimize the required datavolume and ensure real time values even with a poor signal

- Context:
  - User is not in a wifi network and has a mobile connection

- Adaptation:
  - Server reduces the messages to the client by using a filter
  - Wifi mode: send push notification when difference is greater than 0,1°C or 1 % brightness
  - Mobile mode: : send push notification when difference is greater than (0.5°C , 5% brightness)

IMPLEMENTATION

- Server:
  - Rasberry Pi
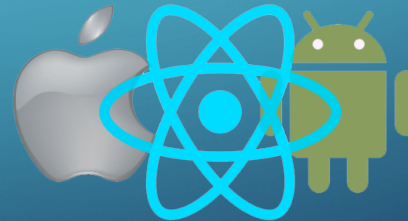 - Node.js (websocket-protocol)
  - Mosquitto (mqtt-protocol)
- Database:
  - MongoDB
- Smartphone-OS:
  - iOS & Android
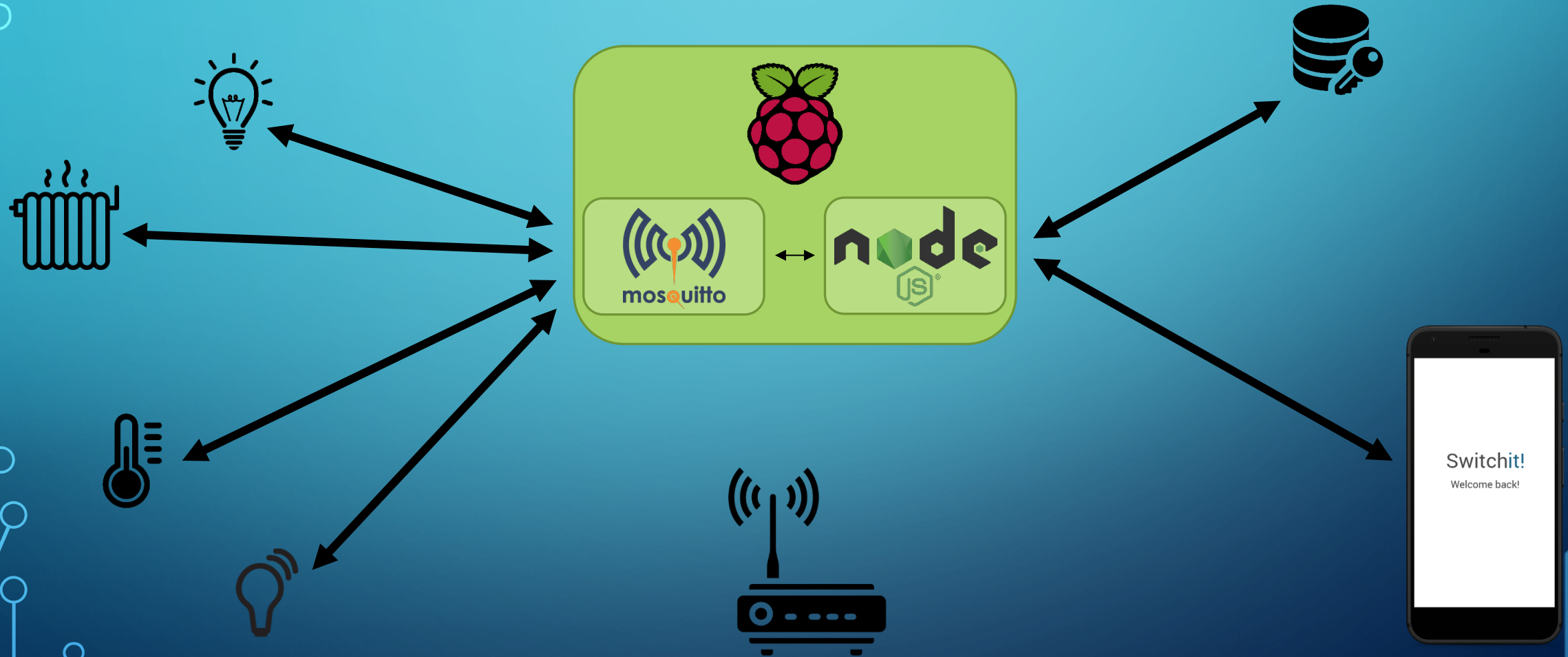   - → React Native
- Appliances:
  - Multiple Sonoff-devices (SC, Touch, S20, TH10, B1)

WORK PLAN

- Done:
  - Communication gateway
  - Database
  - App prototyp
  - Server prototyp

- In progress:
  - Conncetion over websocket to app
  - Design
  - Bug fixing

- Additional:
  - Custom programms for automatisation

ARCHITECTURE

Thank you for your attention!