OpenHAB2

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OpenHAB

- OpenHAB – Open Home Automation Bus
- Gestartet von Kai Kreuzer 2010
- Java
- Aktuelle Version 2.4.0 (17. Dezember 2018)
- Alternativen:
  - FHEM
  - ioBroker
  - Home Assistant (HASS)

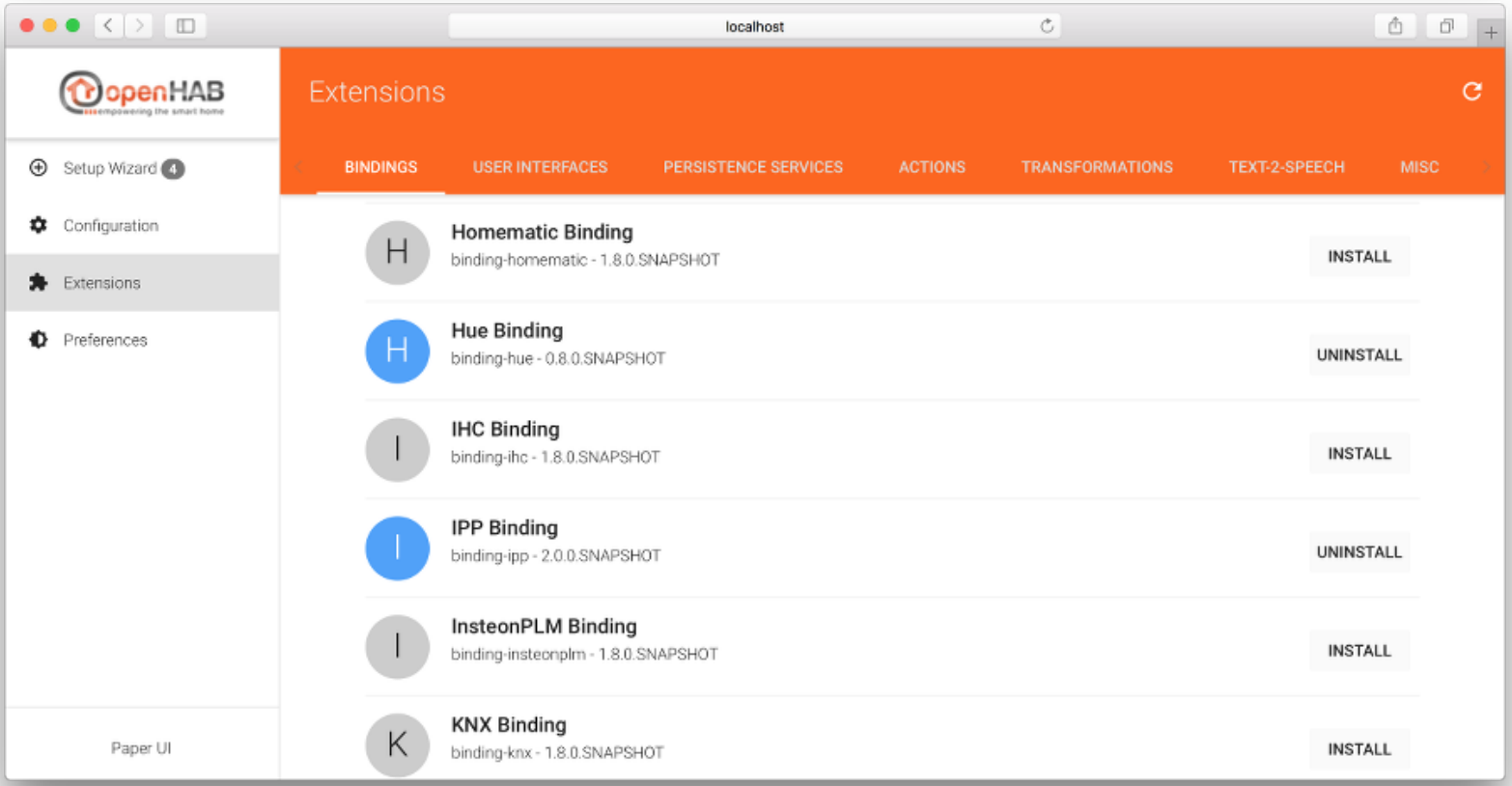
OpenHAB - Übersicht

- Add-ons
  - Bindings
    - Integrationen z.B. hue, Kodi, Ikea, Weather,..
  - Data Peristence
    - InfluxDB, MySQL, MQTT,..
  - Actions
    - MQTT, Telegram, XMPP,..
- UIs
- Things / Items / Sitemaps

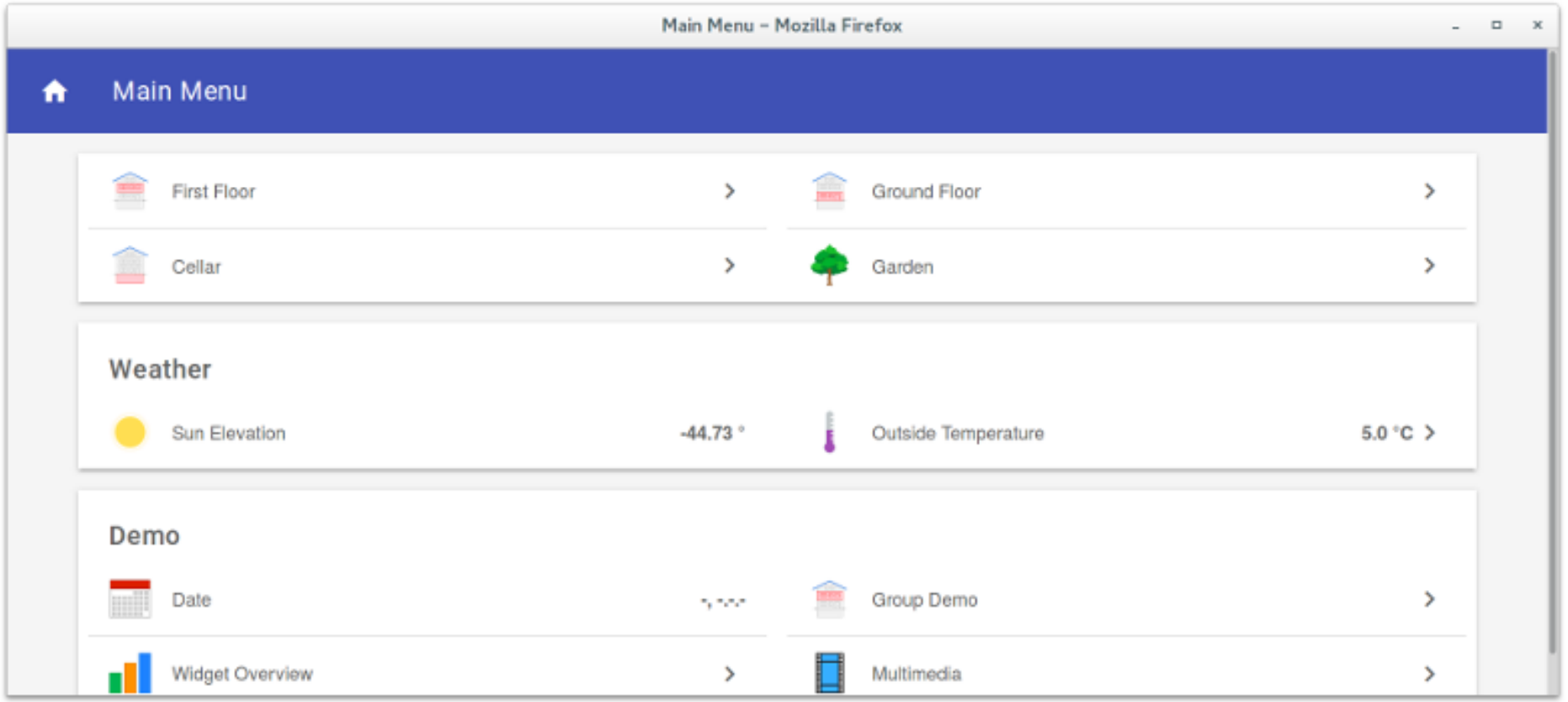
OpenHAB2 - UIs

- ClassicUI
  - OpenHAB 1
- Paper UI
- BasicUI
- HABmin
- HABPanel
- HABot
- Apps: Android/iOS/Windows 10

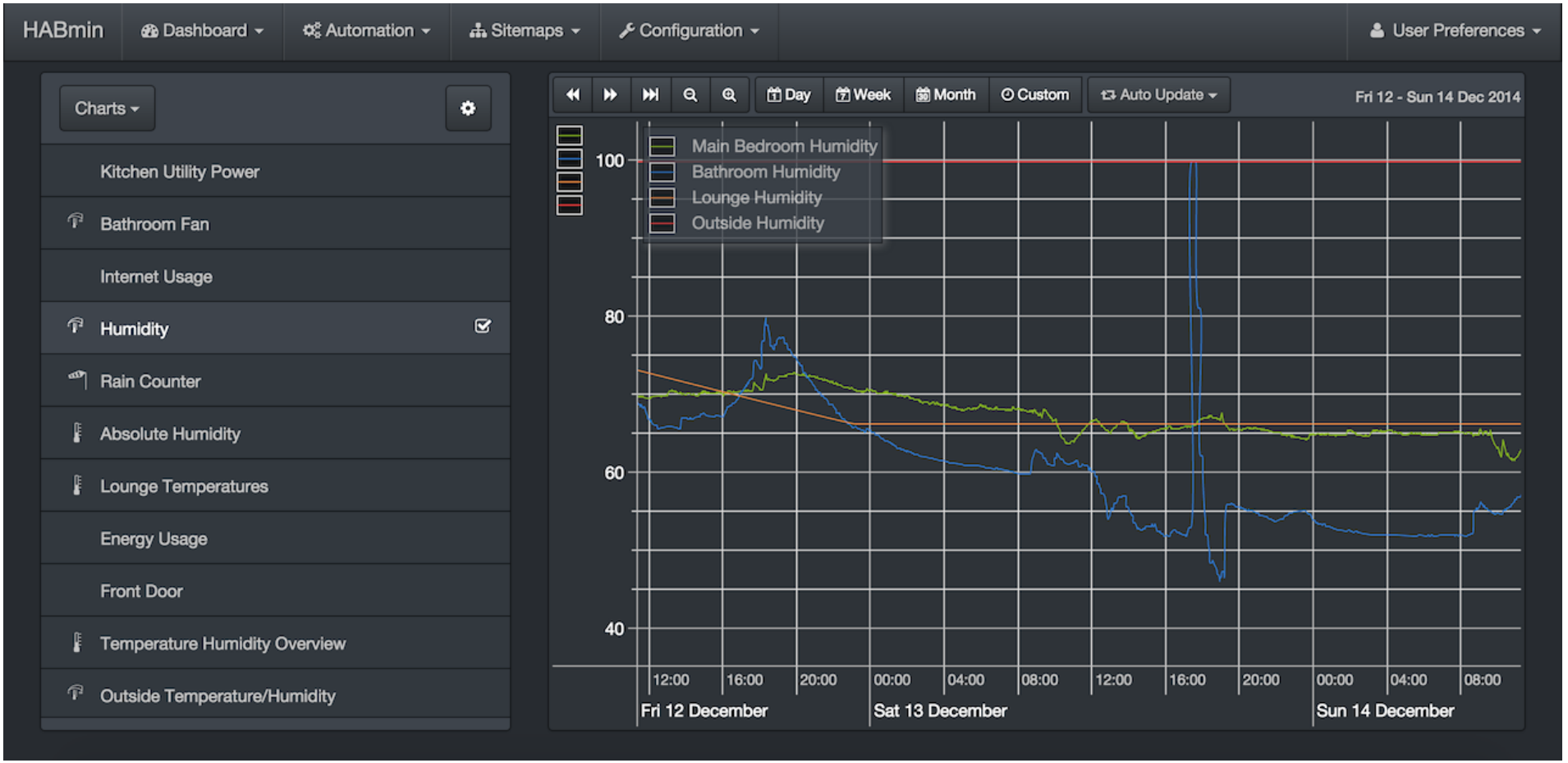
UI – Paper UI


localhost
openHAB
Extensions
Setup Wizard 4
Configuration
Extensions
Preferences
Paper UI
BINDINGS
USER INTERFACES
PERSISTENCE SERVICES
ACTIONS
TRANSFORMATIONS
TEXT-2-SPEECH
MISC
Homematic Binding
binding-homematic - 1.8.0.SNAPSHOT
INSTALL
Hue Binding
binding-hue - 0.8.0.SNAPSHOT
UNINSTALL
IHC Binding
binding-ihc - 1.8.0.SNAPSHOT
INSTALL
IPP Binding
binding-ipp - 2.0.0.SNAPSHOT
UNINSTALL
InsteonPLM Binding
binding-insteonplm - 1.8.0.SNAPSHOT
INSTALL
KNX Binding
binding-knx - 1.8.0.SNAPSHOT
INSTALL

UI – Basic UI

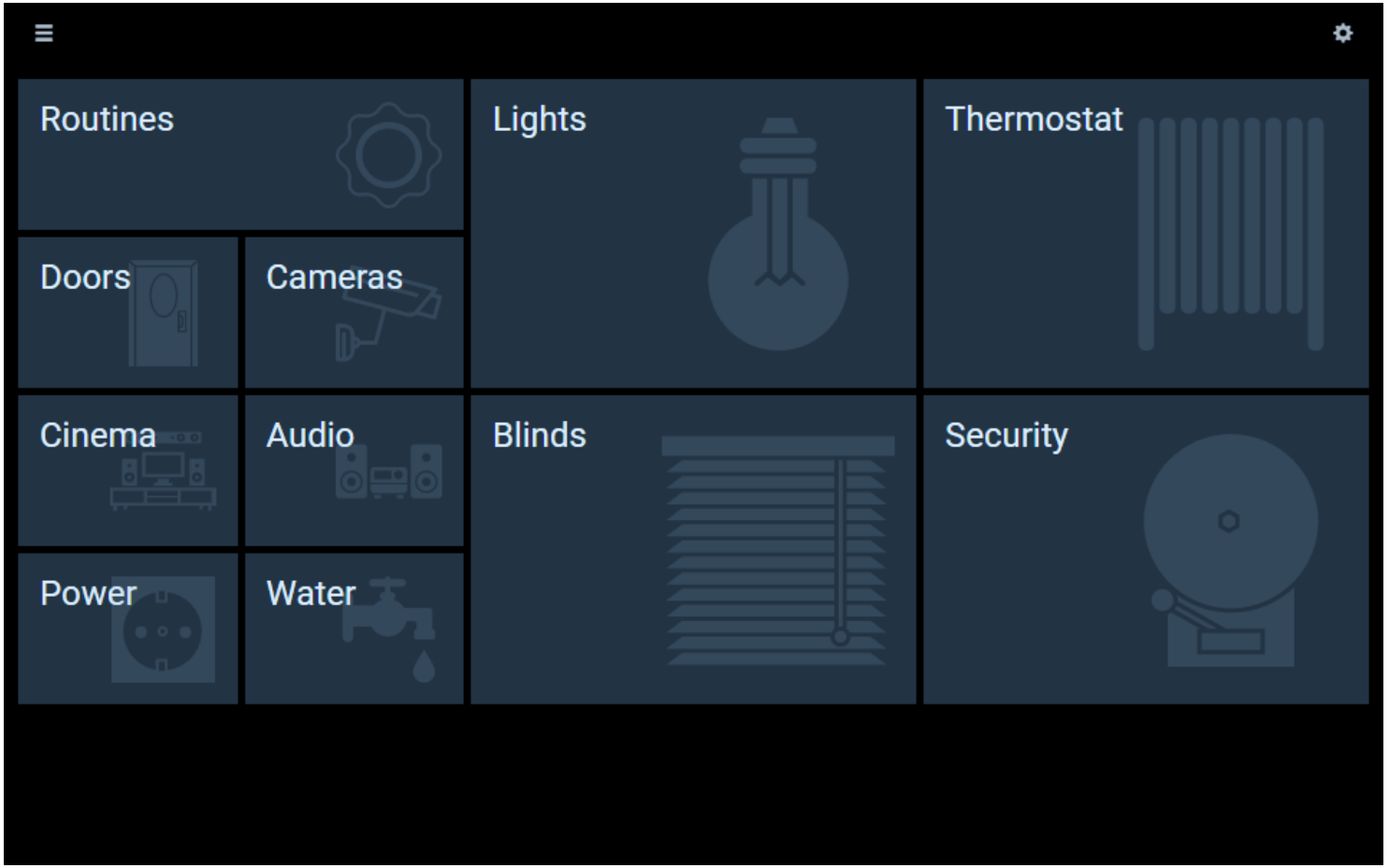

Main Menu – Mozilla Firefox
Main Menu
First Floor
Ground Floor
Cellar
Garden
Weather
Sun Elevation
-44.73 °
Outside Temperature
5.0 °C
Demo
Date
-, -.-.-
Group Demo
Widget Overview
Multimedia

HABmin



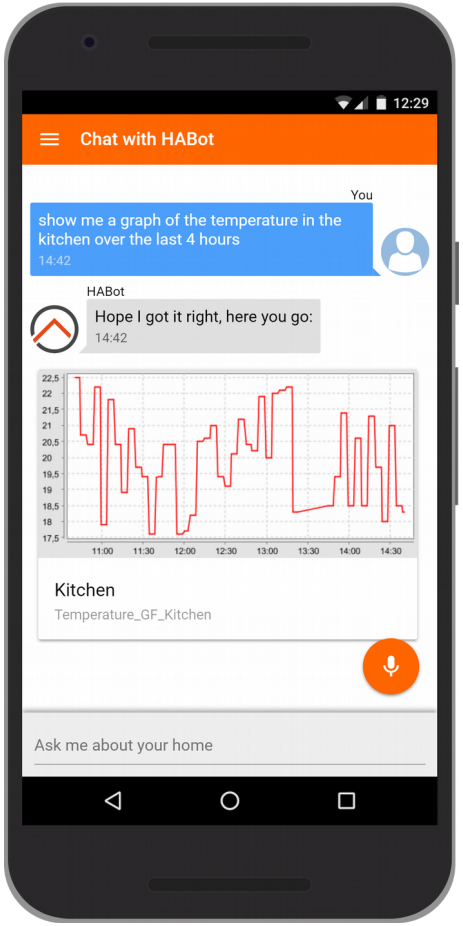
User + Admin Interface

HABPanel



Wall mount screens

HABot



- NLP Bot
- Neu seit OpenHAB 2.4.0
- Nächster Step: Sprachsteuerung ohne „Cloud“

Things

- Things – phyical layer (devices, services, sources)
  - Things haben „Channels“
    - Channels können mit „Items“ verbunden werden
- Things werden nur mit OpenHAB2 Bindungs verwendet. Es gibt in OpenHAB2 aber noch 1.x Bindings

Things

```
ntp:ntp:local  [ hostname="0.pool.ntp.org", refreshInterval=60, refreshNtp=30 ,locale="", timeZone="Europe/Berlin"]

astro:sun:home  [ geolocation="48.7758459,9.1829321,100", interval=60 ]

astro:sun:shutter [ geolocation="48.7758459,9.1829321,100", interval=60 ] {
    Channels:
        Type start : rise#event [
            earliest="06:15",
            latest="08:00"
        ]
        Type start : rise#start [
            earliest="06:15",
            latest="08:00"
        ]
}

Bridge mqtt:broker:myBroker [ host="", secure=false, username="", password="", retain=false, clientID="openHAB2", port=1883 ]
{
    Thing topic mything {
        Channels:
            Type contact : door [ stateTopic="/door/state" ]
            Type number : wind_speed [ stateTopic="/wind/speed/state" ]
            Type number : wind_speed_max [ stateTopic="/wind/speed/state/max" ]

    }
}
```

Items

- Contact
- DateTime
- Group
- Number
- Rollershutter
- String
- Switch

Items

```
Contact DoorStatus "Wohnungstür [%s]" <frontdoor> { channel="mqtt:topic:myBroker:mything:door" }

Switch SleepingLight "Sleeping Room" <light> (lights) {
    http=">[ON:GET:http://192.168.2.13/light2/on] >[OFF:GET:http://192.168.2.13/light2/off]" }

String Remote_Control_57_String { serial="/dev/ttyUSB0,REGEX(^\\[57\\] 57;(.*))" }

Number:ElectricPotential Remote_Control_Sleeping_Room_BatteryVoltage "remote control battery (voltage) [%.2f %unit%]" <battery>
DateTime Remote_Control_Sleeping_Room_LastUpdate "last time remote control [%1$td.%1$tm.%1$tY %1$tH:%1$tM]" <time>
```

Contact Item „DoorStatus“ ist mit einem OpenHAB2 Binding gemacht. (Channel)
Remote_Control_57_String ist mit einem OpenHAB1.x Binding gemacht.

<light> = Icon
(lighs) = Item Group

Rules

- Basiert auf Xbase und Xtend
- Rules können getriggert werden:
  - Item Statusänderung
  - Time (cron)
  - Thing Statusänderung

Rules

```
rule "Door opened"
when
    Item DoorFlat changed
then
    if (DoorFlat.state == OPEN && Window_Contact_1_Status.state != 1) {
        executeCommandLine("/etc/openhab2/external-scripts/bin/window-beep")

    }
end
```

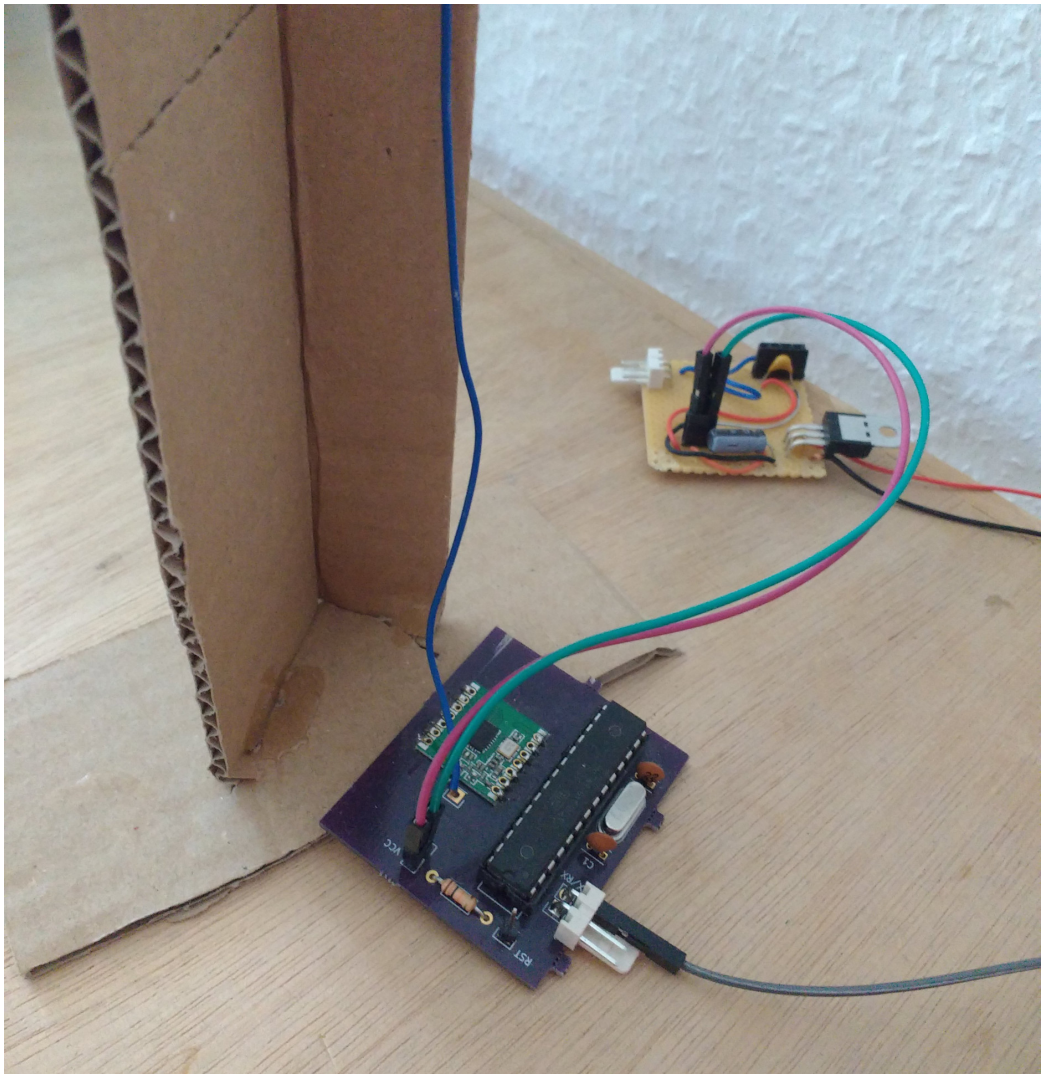
Demo OpenHAB + Grafana

- OpenHAB Demo
- Grafana Dashboard

RFM69 & OpenHAB

- RFM69 433 Mhz Funkmodul von HopeFM
  - AES128 Verschlüsselung
  - Low Power
- Arduino Framework mit PlatformIO Atmel 328p
- Empfangsstation:
  - RFM69 + Atmel + USB/Serial => OpenHAB

RFM69 Empfangsmodul



RFM69 <=> OpenHAB

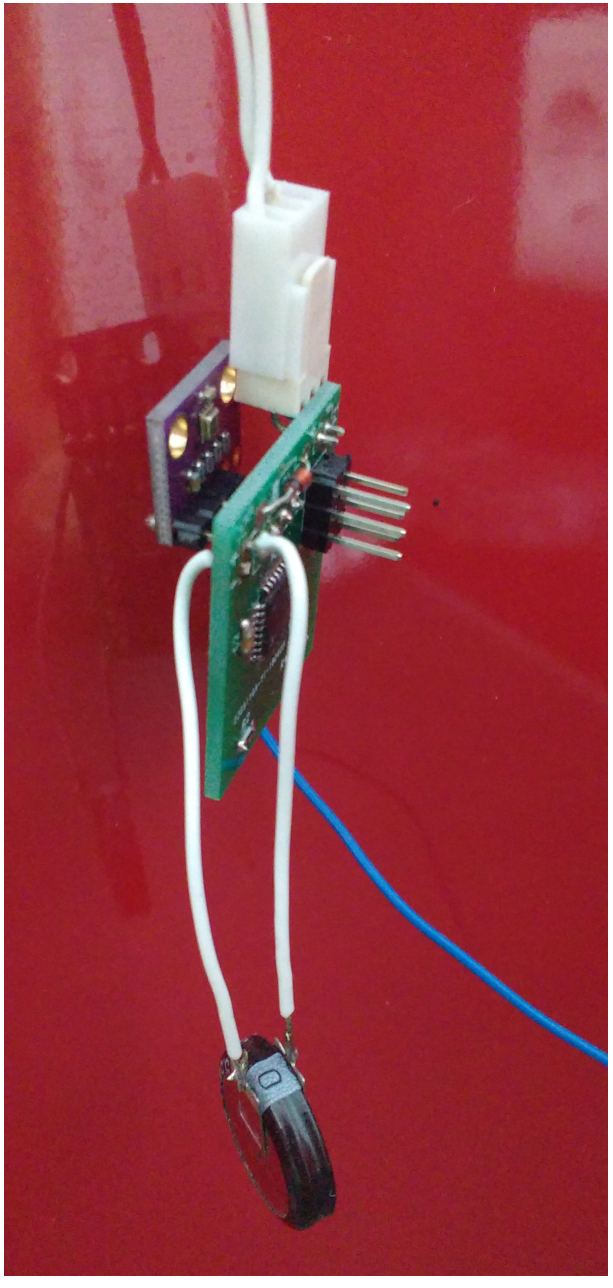
- Versenden von einfachen Strings:
  - [50] 50;20.70;29.20[RX_RSSI:-36]

```
String BME280_52_String { serial="/dev/ttyUSB0,REGEX(^\\[52\\] 52;(.*))" }
```

```
rule "set BME280 ID52 values from str"
when
    Item BME280_52_String received update
then
    var humidity = transform("REGEX", "^(\\d*.\\d*);.*", BME280_52_String.state.toString)
    var pascal = transform("REGEX", "^\\d*.\\d*;(\\d*.\\d*);.*", BME280_52_String.state.toString)
    var temperature = transform("REGEX", "^\\d*.\\d*;\\d*.\\d*;(\\d*.\\d*).*", BME280_52_String.state.toString)

    var voltage = transform("REGEX", "^\\d*.\\d*;\\d*.\\d*;\\d*.\\d*;(\\d*.\\d*).*", BME280_52_String.state.toString)

    BME280_52_Temperature.postUpdate(temperature)
    BME280_52_Humidity.postUpdate(humidity)
    BME280_52_hPascal.postUpdate(Float::parseFloat(pascal) / 100)

    if (voltage !== null) {
        BME280_52_BatteryVoltage.postUpdate(voltage)
    }

    BME280_52_LastUpdate.postUpdate(new DateTimeType())

end
```

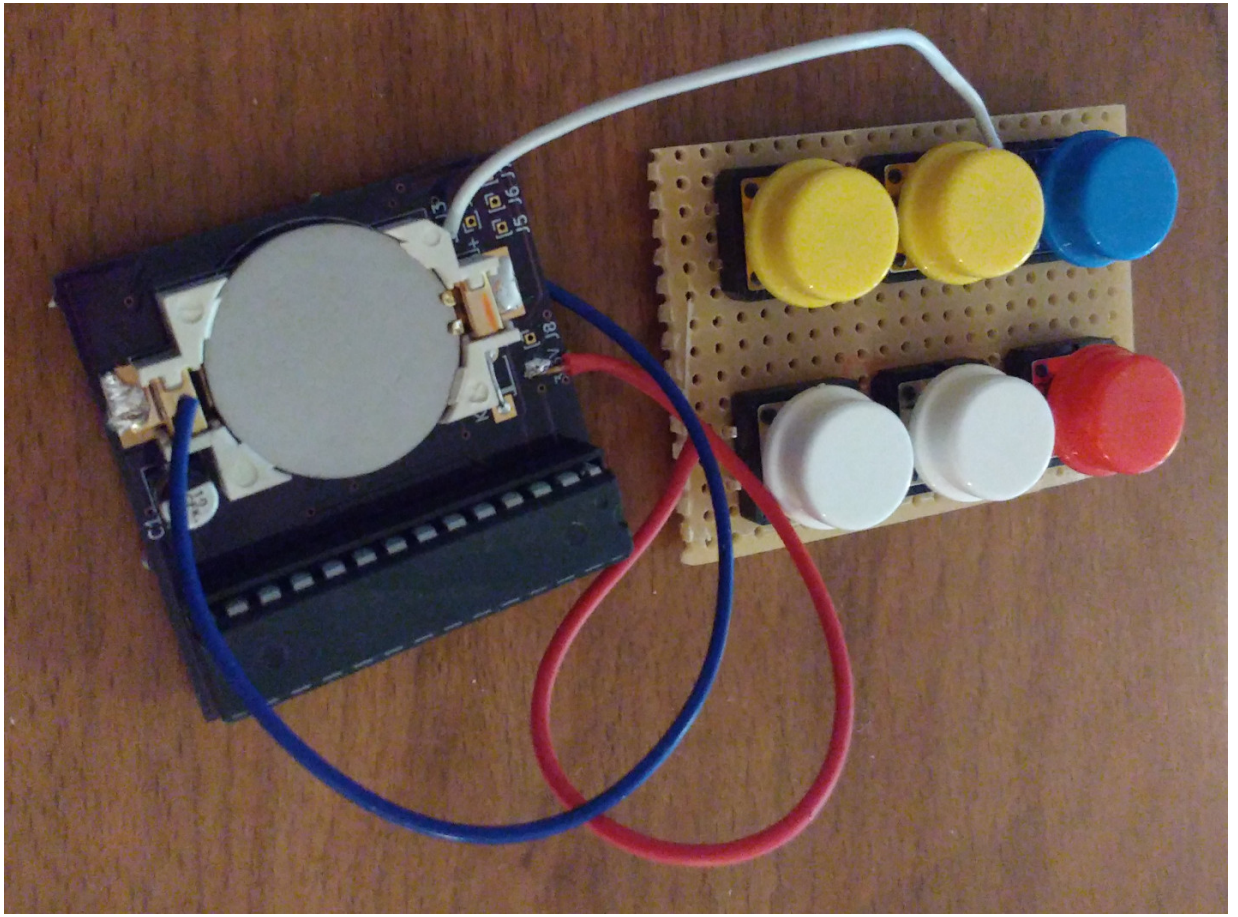
Innenraum Überwachung

- Temperatur
- Luftdruck
- Luftfeuchte
- Solarbetrieben
- SuperCap für die Nacht



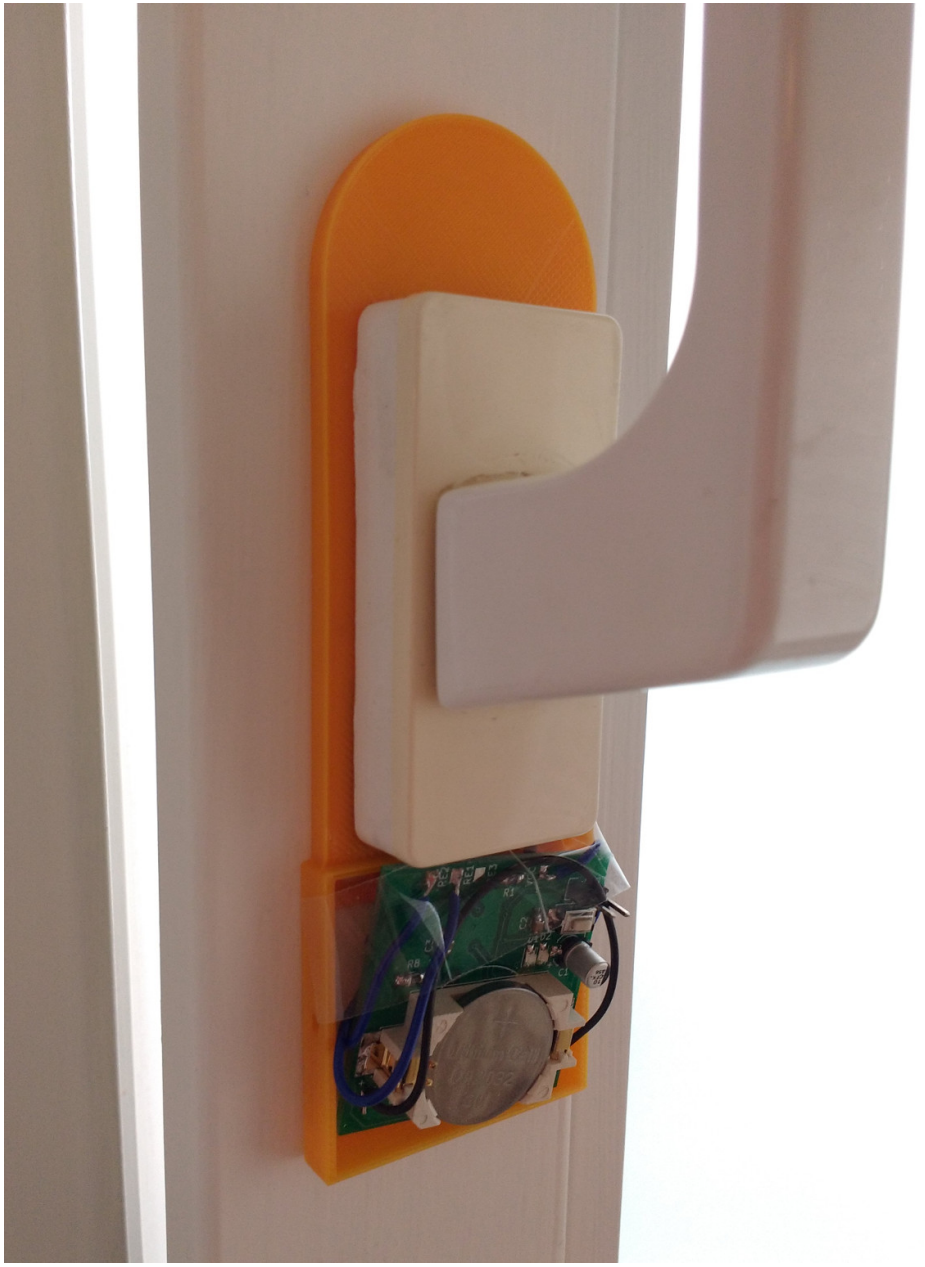
Fernsteuerung

- 6 Tasten
- OpenHAB Rules legen fest welche Aktion bei Druck passiert



Fenster-Überwachung

- Status ob Fenster:
  - Geschlossen
  - Gekippt
  - Offen



Solarbetriebene Wetterstation

- Regenmesser
- Luftfeuchte
- Temperatur