

# Home Automation

mit Windows 10 IoT Core



# Christian Kratky

krátký (tschechisch) - eine geringe Länge habend

**Softwareentwickler** seit 2005

**Fachinformatiker** Fachrichtung Anwendungsentwicklung

**B.Sc. Wirtschaftsinformatik\***

**Schwerpunkt .NET / C# / WPF / IoT / Arduino**

**MCPD: Windows Developer 4**

**XING:** [https://www.xing.com/profile/Christian\\_Kratky](https://www.xing.com/profile/Christian_Kratky)



**prodot GmbH** ([www.prodot.de](http://www.prodot.de))

**seit April 2009 angestellt**

**Senior Developer**

**Ausbilder**

**Projekte für ALDI Süd, digitalSTROM u.a.**

# Congratulations, Home Automation Rockstars!

By  **Alex Glow**

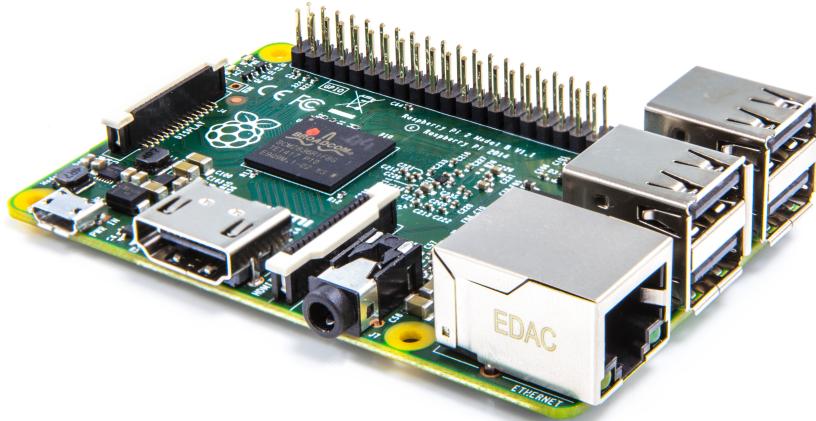
September 23, 2015

 **Best Project of All: Europe**

<https://www.hackster.io/blog/win-10-winners>

{ Raspberry Pi 2 }

 HA4IoT.de



 Windows 10

 Microsoft® .NET

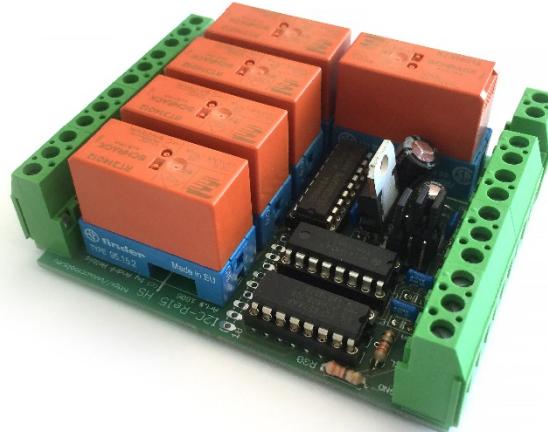
Christian Kratky

{ 230V-Ausgänge }



## HSRel5 von CCTools.eu

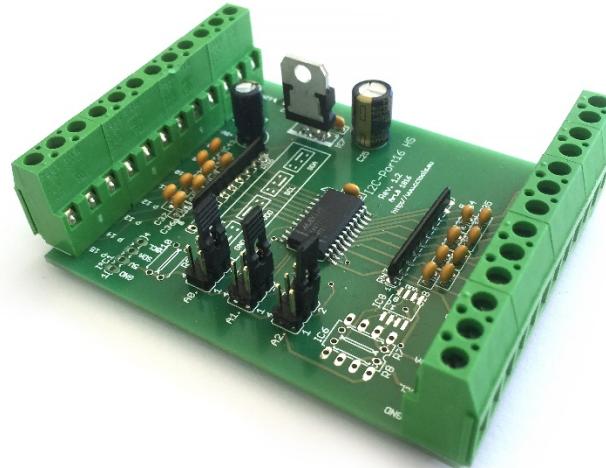
I<sup>2</sup>C 8Bit Port Expander PCF8574/A





## I<sup>2</sup>C-Port 16 HS von CCTools.eu

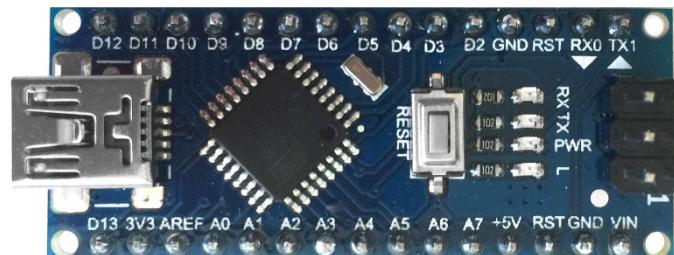
I<sup>2</sup>C 16Bit Port Expander MAX7311





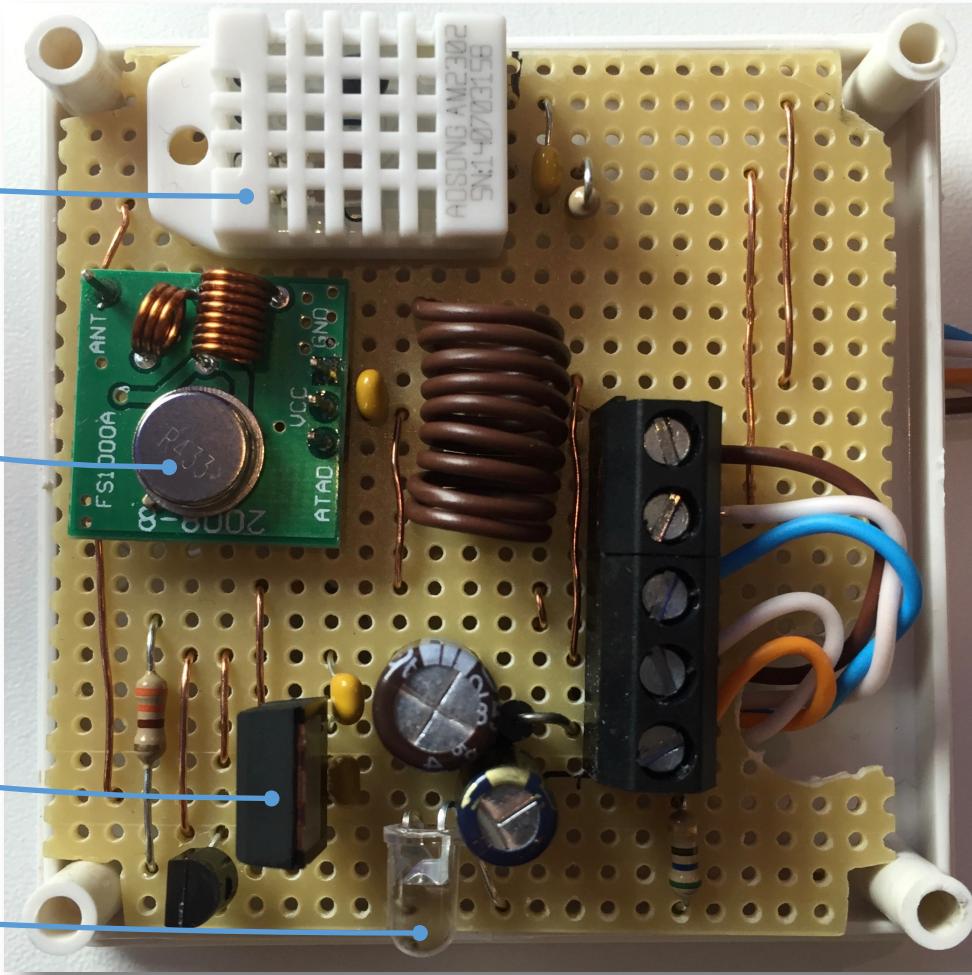
## Arduino Nano

16Mhz, 32KB RAM, I<sup>2</sup>C Slave



- **DHT22**
  - Temperatur
  - Luftfeuchtigkeit
- **433MHz Sender**
  - Funksteckdosen
- **Infrarot LED**
  - RGB-Strip
  - TV
  - ...

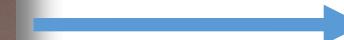
DHT22 Sensor



433MHz Transmitter

Voltage regulator

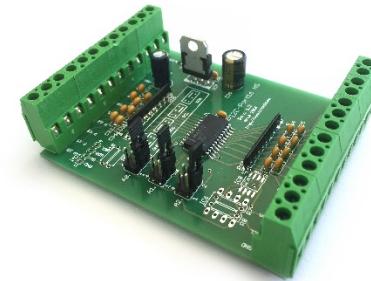
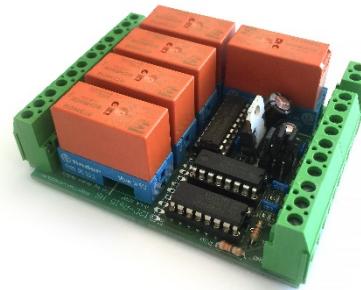
Infrarot LED



# { Hardware-Komponenten }



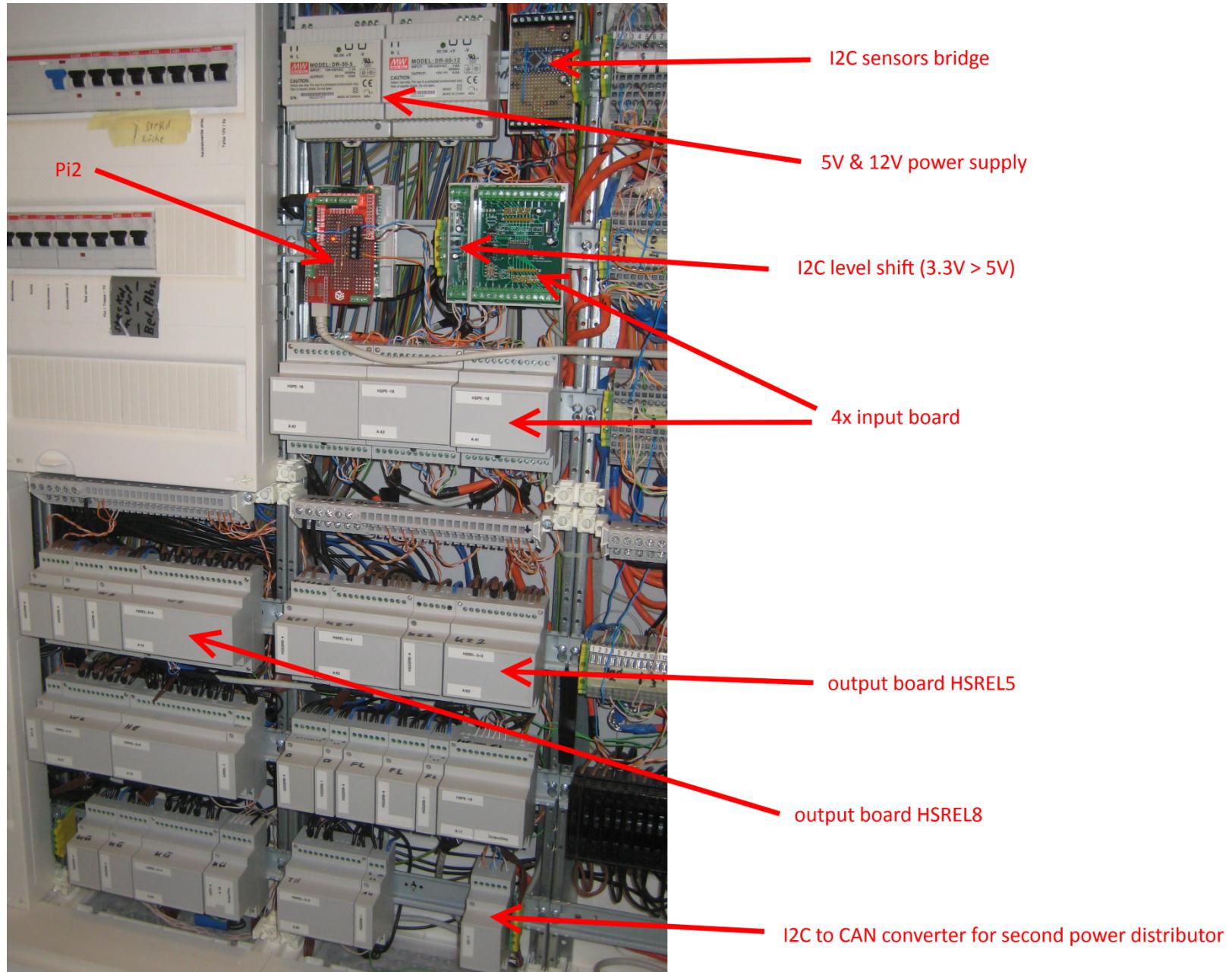
I<sup>2</sup>C-Bus



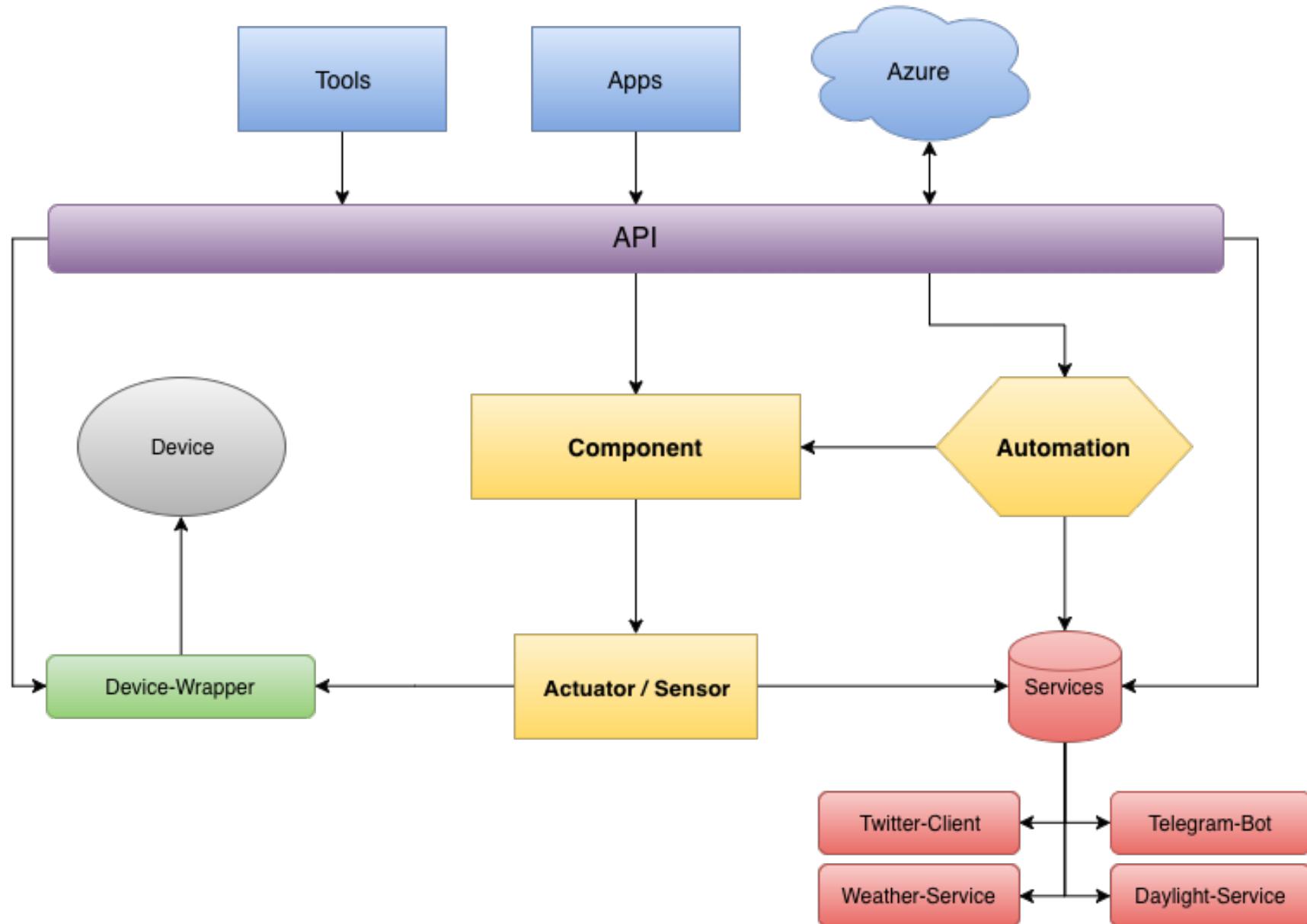
# { Live-Installation }



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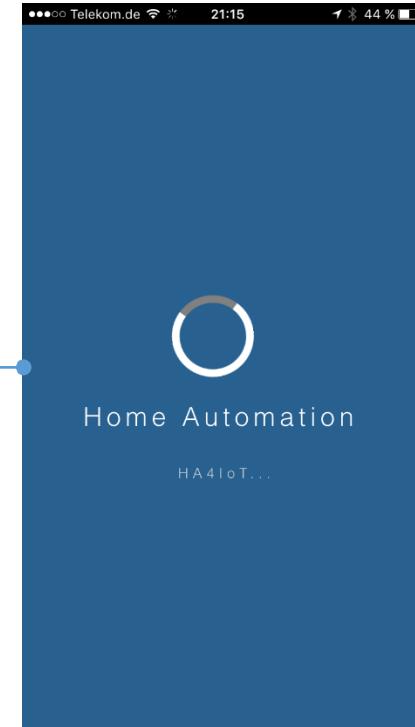


## HA4IoT-WebServer

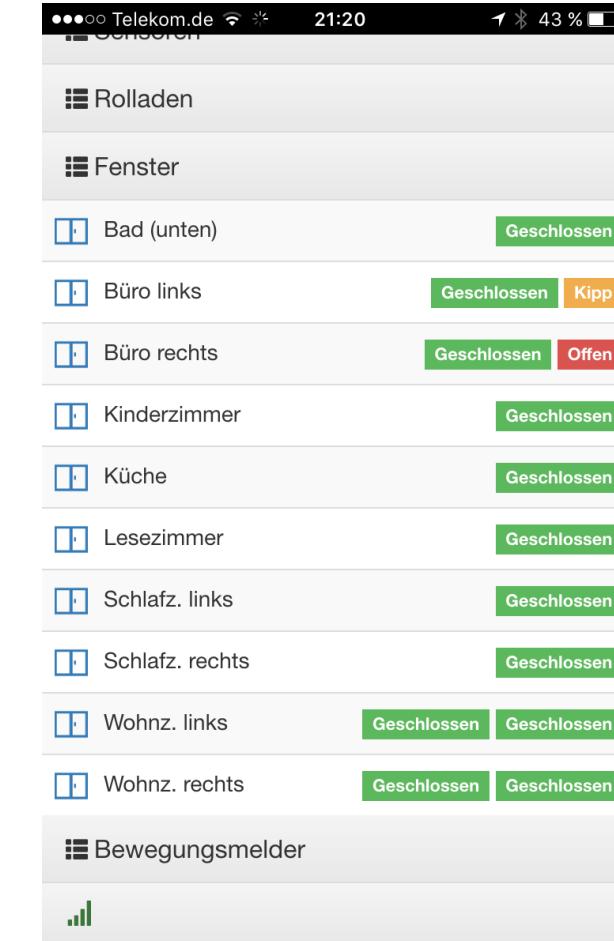
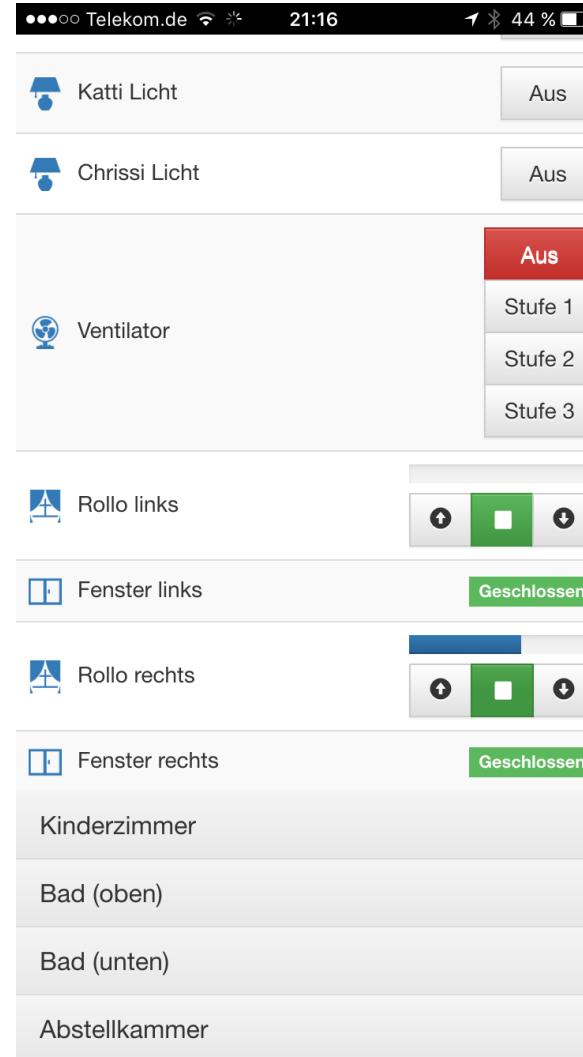
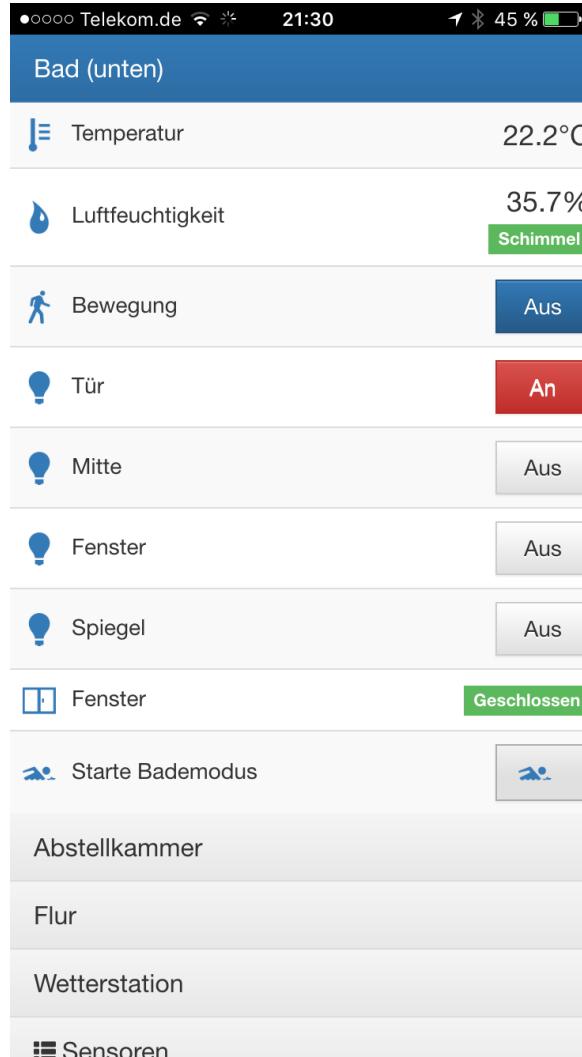


HTML / JavaScript / JSON

Bootstrap, jQuery, Angular JS, MetroStudio



# { App – Screens }





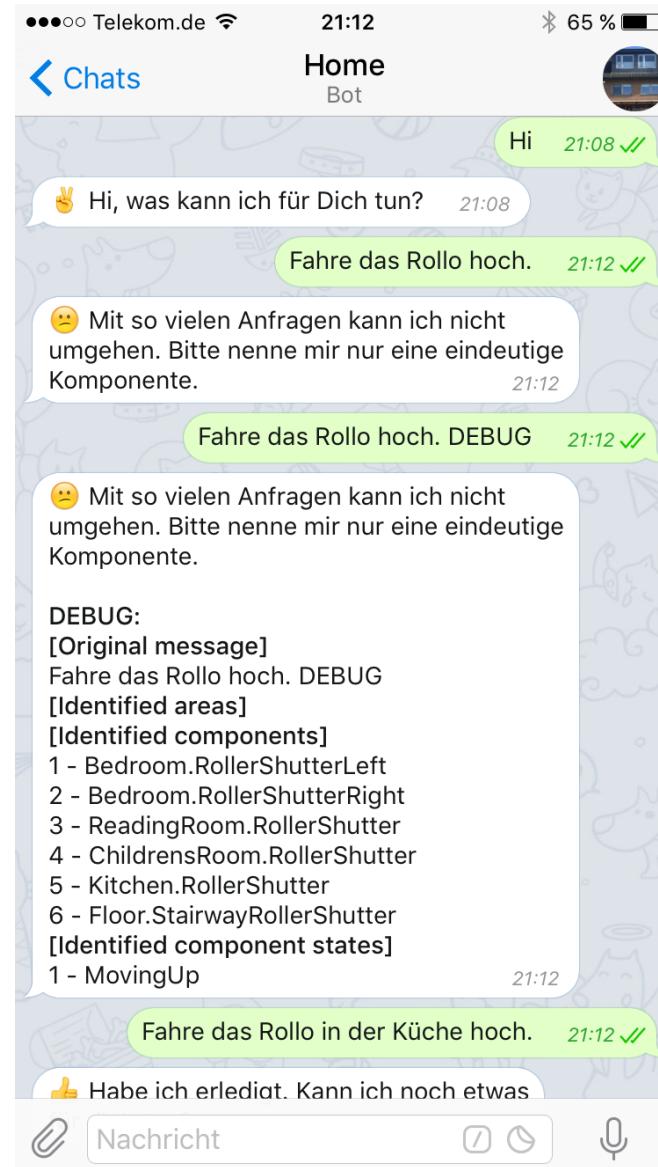
HTTP, JSON

Speech (Request, Response, Synonyms)



**The Botfather**

# { Personal Agent – Screens }



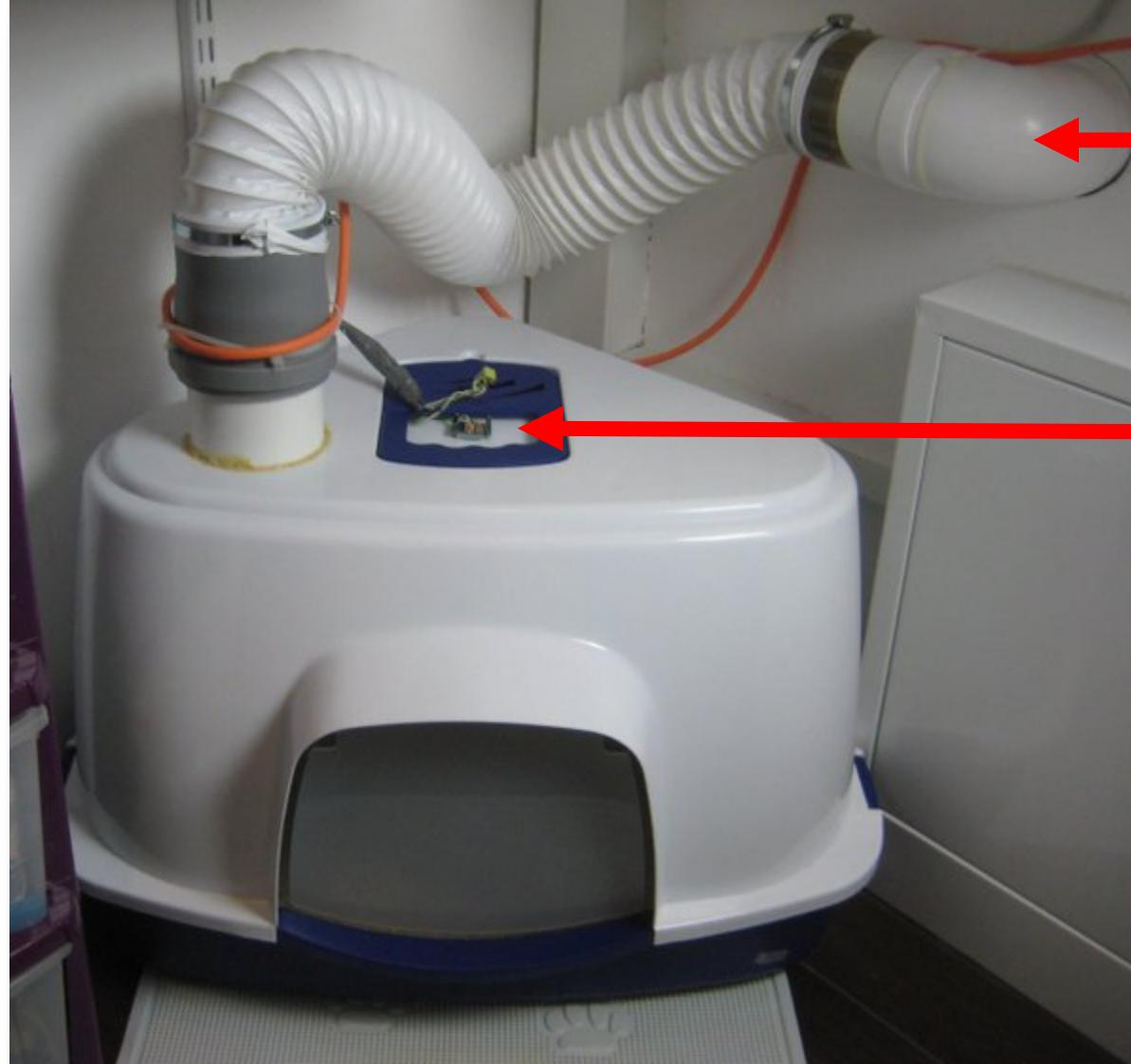


HTTP, JSON

Tweets



# { Twitterndes Katzenklo }



Gebläse

Bewegungs-  
melder

@JackSmootje

Christian Kratky

# { Twitter Account }



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## Jack Smootje

@jacksmootje FOLLOW YOU

I am a bengal cat from Germany with an automated cat litter box. The box automatically turns on a fan if I enter it and sends tweets after I left it.

📍 Kamp-Lintfort, Deutschland

🔗 HA4IoT.de



TWEETS  
427

FOLLOWING  
354

FOLLOWERS  
147

LIKES  
1



Following

Tweets

Tweets & replies

Photos & videos



Jack Smootje @jacksmootje · 5h

Had a great time with my litter box.  
Time in litter box: 209s  
Nr. this day: 5

@chkratky



...

Jack Smootje @jacksmootje · 6h

Christian Kratky



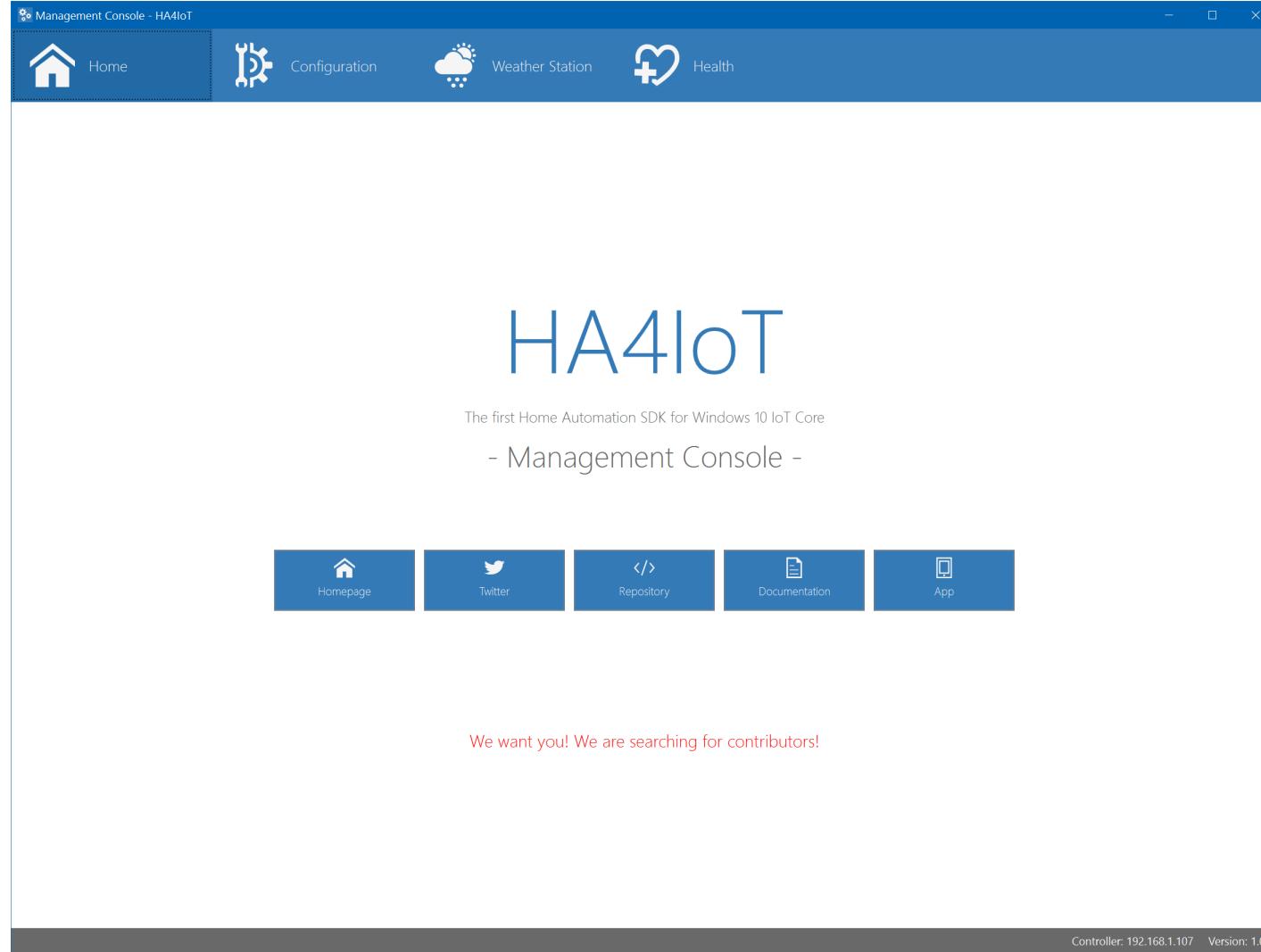
JSON

Queues (RX, TX), EventHub (TX)



Microsoft Azure

# { Management Console }



# { Management Console – Actuator Configuration }

Management Console - HA4IoT

Home Configuration Weather Station Health

Save Refresh

Wohnzimmer Büro Lesezimmer Schlafzimmer Küche Kinderzimmer Bad (unten) Bad (oben) Abstellkammer Flur

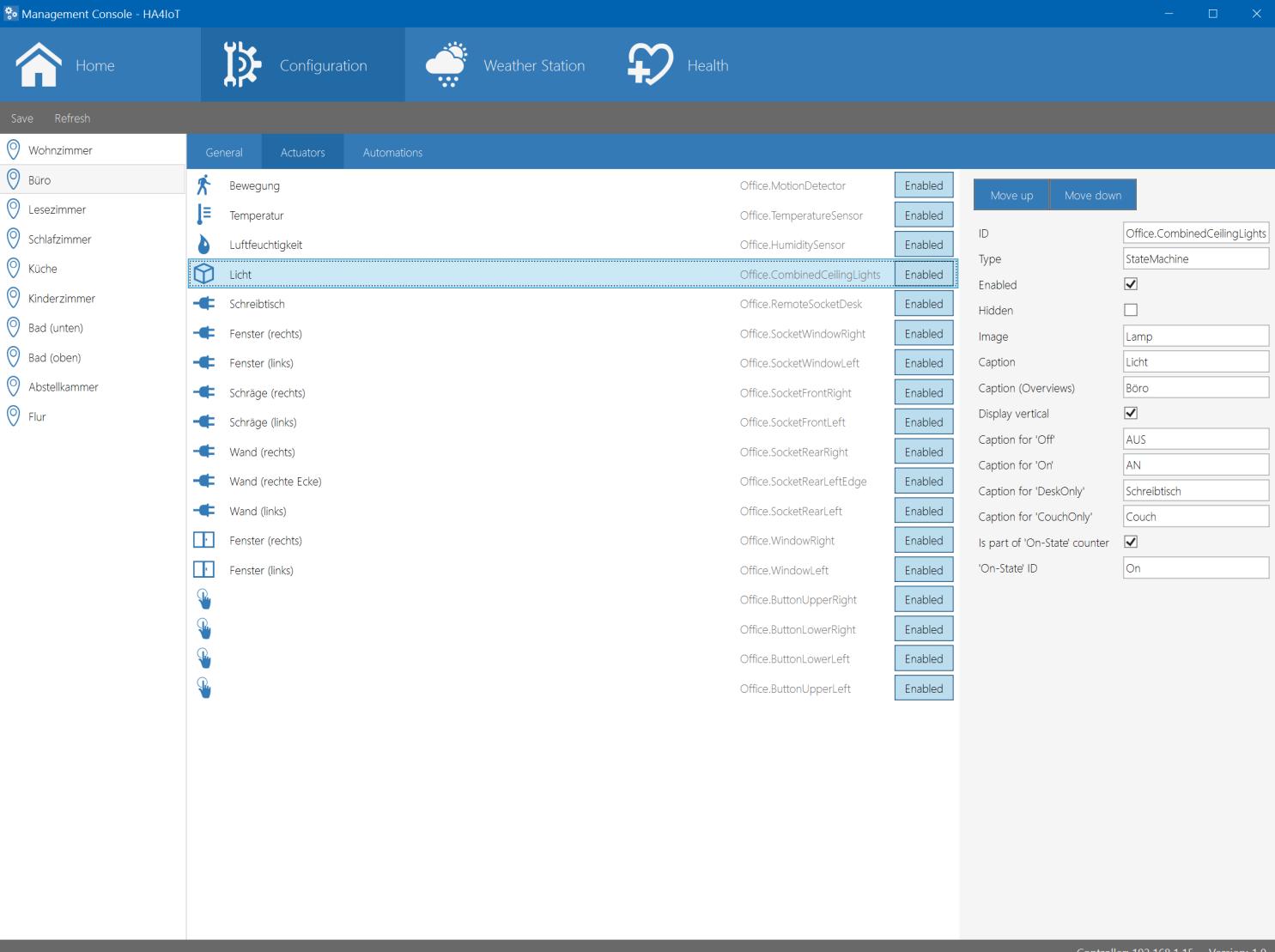
General Actuators Automations

Actuator Type	Configuration
Bewegung	Office.MotionDetector Enabled
Temperatur	Office.TemperatureSensor Enabled
Luftfeuchtigkeit	Office.HumiditySensor Enabled
Licht	Office.CombinedCeilingLights Enabled
Schreibtisch	Office.RemoteSocketDesk Enabled
Fenster (rechts)	Office.SocketWindowRight Enabled
Fenster (links)	Office.SocketWindowLeft Enabled
Schräge (rechts)	Office.SocketFrontRight Enabled
Schräge (links)	Office.SocketFrontLeft Enabled
Wand (rechts)	Office.SocketRearRight Enabled
Wand (rechte Ecke)	Office.SocketRearLeftEdge Enabled
Wand (links)	Office.SocketRearLeft Enabled
Fenster (rechts)	Office.WindowRight Enabled
Fenster (links)	Office.WindowLeft Enabled
	Office.ButtonUpperRight Enabled
	Office.ButtonLowerRight Enabled
	Office.ButtonLowerLeft Enabled
	Office.ButtonUpperLeft Enabled

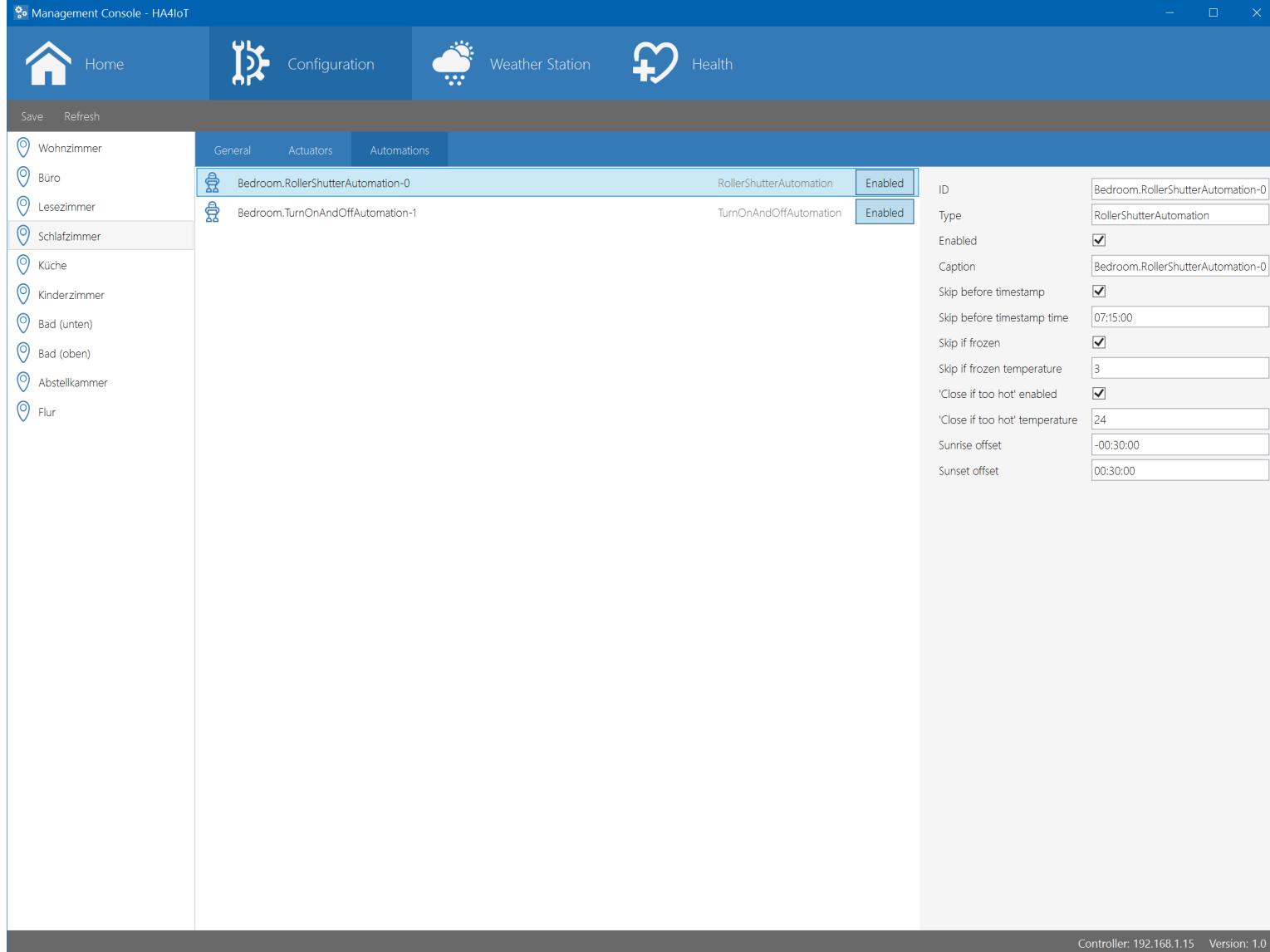
Move up Move down

ID: Office.CombinedCeilingLights  
Type: StateMachine  
Enabled:   
Hidden:   
Image: Lamp  
Caption: Licht  
Caption (Overviews): Büro  
Display vertical:   
Caption for 'Off': AUS  
Caption for 'On': AN  
Caption for 'DeskOnly': Schreibtisch  
Caption for 'CouchOnly': Couch  
Is part of 'On-State' counter:   
'On-State' ID: On

Controller: 192.168.1.15 Version: 1.0



# { Management Console – Automation Configuration }



Management Console - HA4IoT

Home Configuration Weather Station Health

Save Refresh

General Actuators Automations

Wohnzimmer Büro Lesezimmer Schlafzimmer Küche Kinderzimmer Bad (unten) Bad (oben) Abstellkammer Flur

Bedroom.RollerShutterAutomation-0 RollerShutterAutomation Enabled

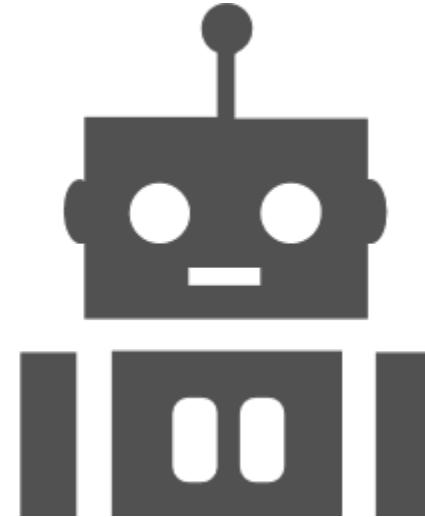
Bedroom.TurnOnAndOffAutomation-1 TurnOnAndOffAutomation Enabled

ID	Bedroom.RollerShutterAutomation-0
Type	RollerShutterAutomation
Enabled	<input checked="" type="checkbox"/>
Caption	Bedroom.RollerShutterAutomation-0
Skip before timestamp	<input checked="" type="checkbox"/>
Skip before timestamp time	07:15:00
Skip if frozen	<input checked="" type="checkbox"/>
Skip if frozen temperature	3
'Close if too hot' enabled	<input checked="" type="checkbox"/>
'Close if too hot' temperature	24
Sunrise offset	-00:30:00
Sunset offset	00:30:00

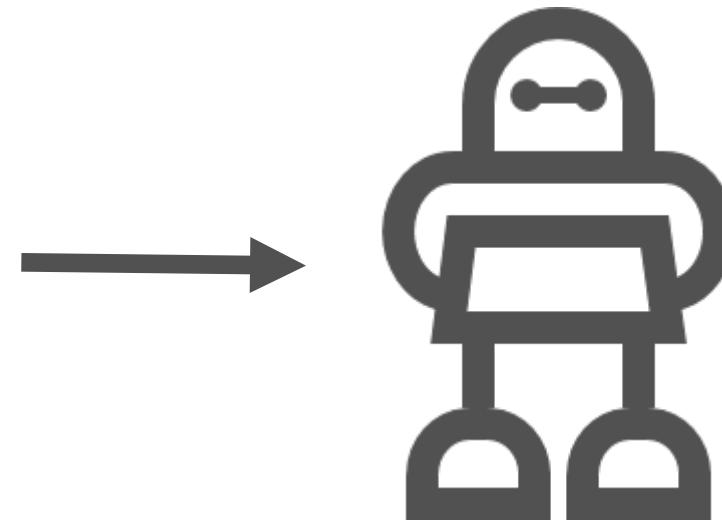
Controller: 192.168.1.15 Version: 1.0

# { Terminal (Live) }





# Home Automation!



# HA4IoT TO THE FUTURE

**3+ Entwickler    X10 Support    Native Apps    Cortana Integration**

**ESP8266.nu Support    Personal Assistant    Xamarin Apps**



PUSH BUTTONS



MOTION DETECTORS



REED SWITCHES



SWITCHES



SUNRISE

From OpenWeatherMap



SUNSET

From OpenWeatherMap



RGB LED STRIP

Via infrared



RC SOCKET

Via 433MHz



TEMPERATURE

Rooms and outside



HUMIDITY

Rooms and outside



LAMPS



SOCKETS



VENTILATION



CEILING FANS



SHUTTERS



PUMPS



LITTER BOX



FLY KILLER



**Homepage**

[www.HA4IoT.de](http://www.HA4IoT.de)

**Projekt**

[https://www.hackster.io/cyborg-titanium-14/home-automation-with-raspberry-pi-2-and-windows-10-iot-784235?ref=challenge&ref\\_id=15&offset=1](https://www.hackster.io/cyborg-titanium-14/home-automation-with-raspberry-pi-2-and-windows-10-iot-784235?ref=challenge&ref_id=15&offset=1)

**Source Code**

<https://github.com/chkr1011/CK.HomeAutomation>

**Twitter**

@chKratky

**Twitter (Jack)**

@jackSmootje