

Home Automation

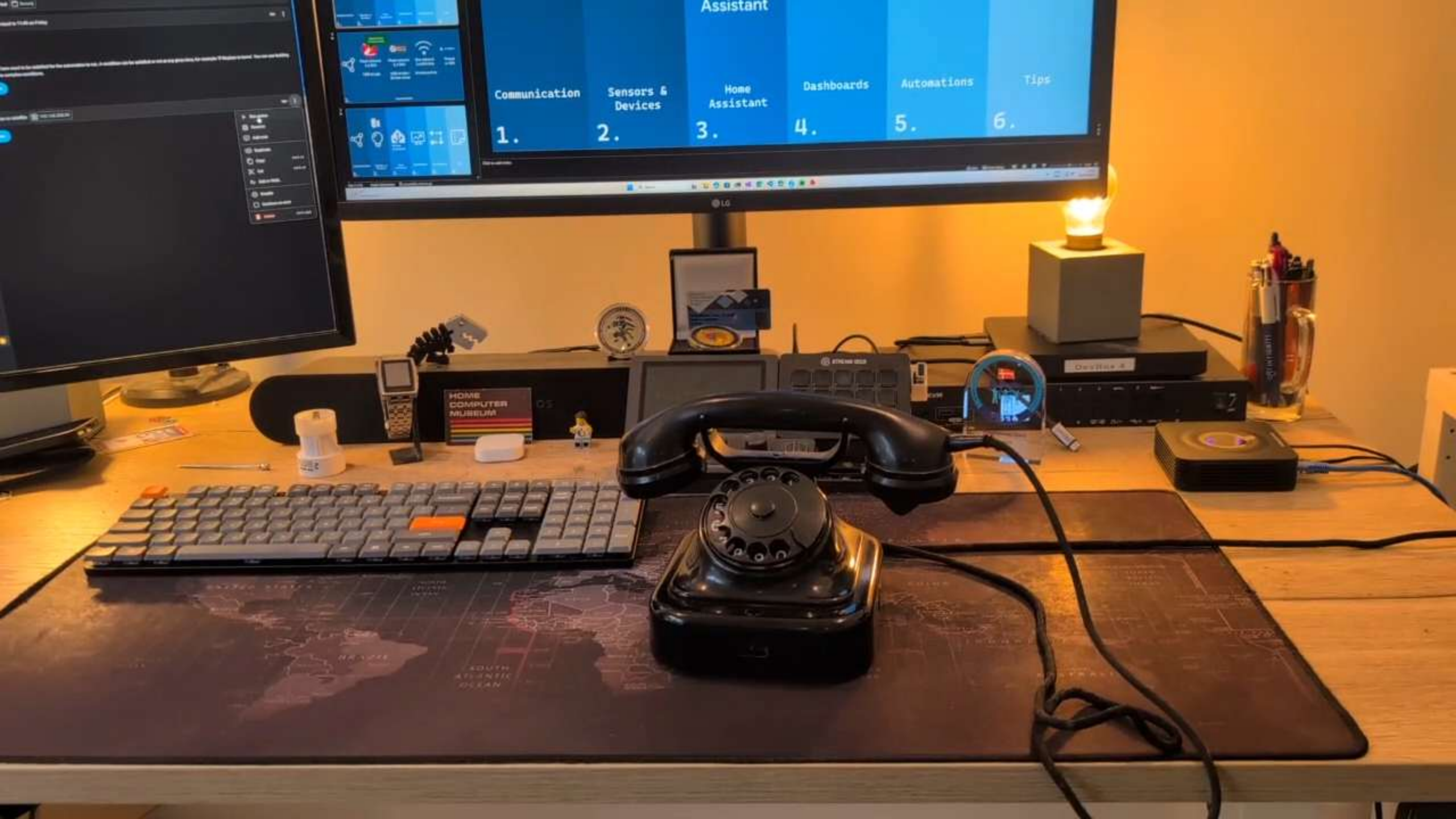
Take your home automation to the (dot)next level 🤖

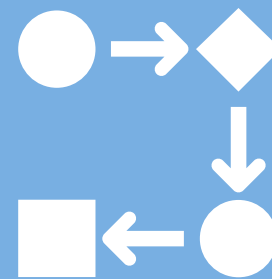


Stephan van Rooij

Professional burglar
Software architect
Microsoft MVP
Speaker







Home
Assistant

Communication

Sensors &
Devices

Home
Assistant

Dashboards

Automations

Tips

1.

2.

3.

4.

5.

6.



Mesh network
2,4 GHz

USB dongle



Mesh network
2,4 GHz

USB dongle /
Border router



Star network
2,4/5/6 GHz

Access points



Thread
or Wifi



Communication

1.



Sensors &
Devices

2.



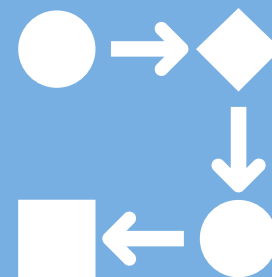
Home
Assistant

3.



Dashboards

4.



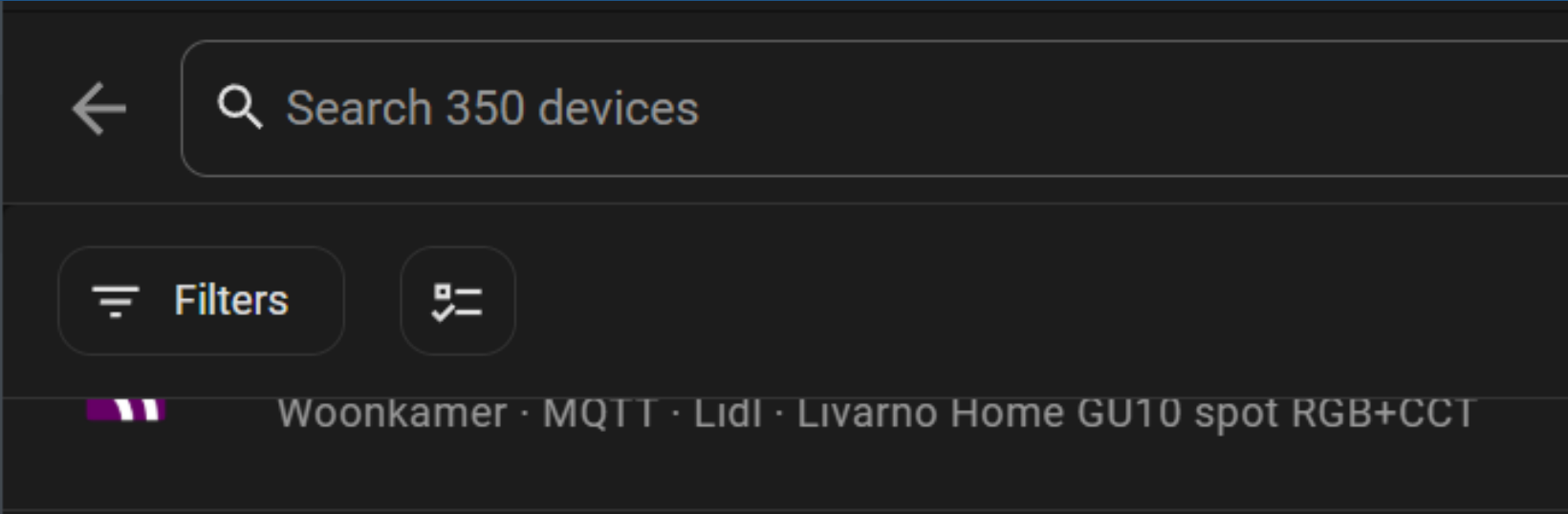
Automations

5.



Tips

6.



Sensors &
Devices

2.



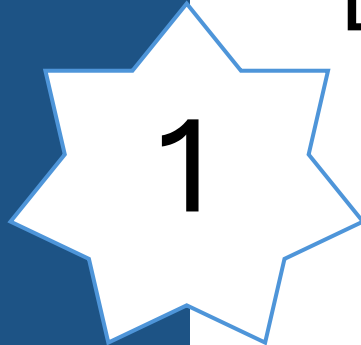
10

Sensors &
Devices

Door / Window sensor xiaomi
Zigbee

Pros
Tiny
Battery life

Cons
CR1632 battery



Sensors &
Devices

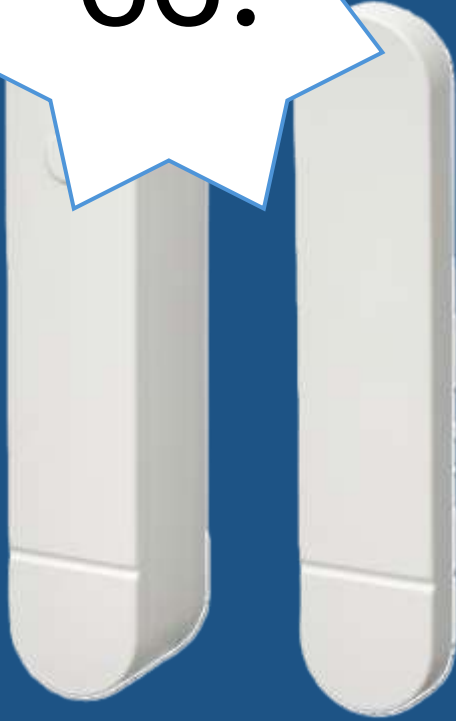
Door / Window sensor Ikea
Zigbee

Pros
AAA battery

Cons
DO NOT BUY (discontinued)



€6!



6

Sensors &
Devices

Door / Window sensor Ikea
Matter over thread

Pros

AAA battery (rechargeable)

Cons

A bit big (due to AAA bat.)



Sensors &
Devices

Presence sensor
Zigbee

Pros
Reliable

Cons
CR1632 battery

4



6

Radiator valve
Proprietary

Pros
HomeKit through dongle

Cons
Schedule in cloud
Cloud API (no longer free/open)

Sensors &
Devices

2.



Sensors &
Devices

9

Multi room music
Wifi

Pros
Stable & Synced music

Cons
App is crap
Control over SOAP 🙄



Wireless group switch Robbshop Zigbee

Pros

Direct control 4 light (groups)

Battery life

Cons

CR2450 battery

10

Sensors &
Devices

2.





Sensors &
Devices

ESP32

Tiny

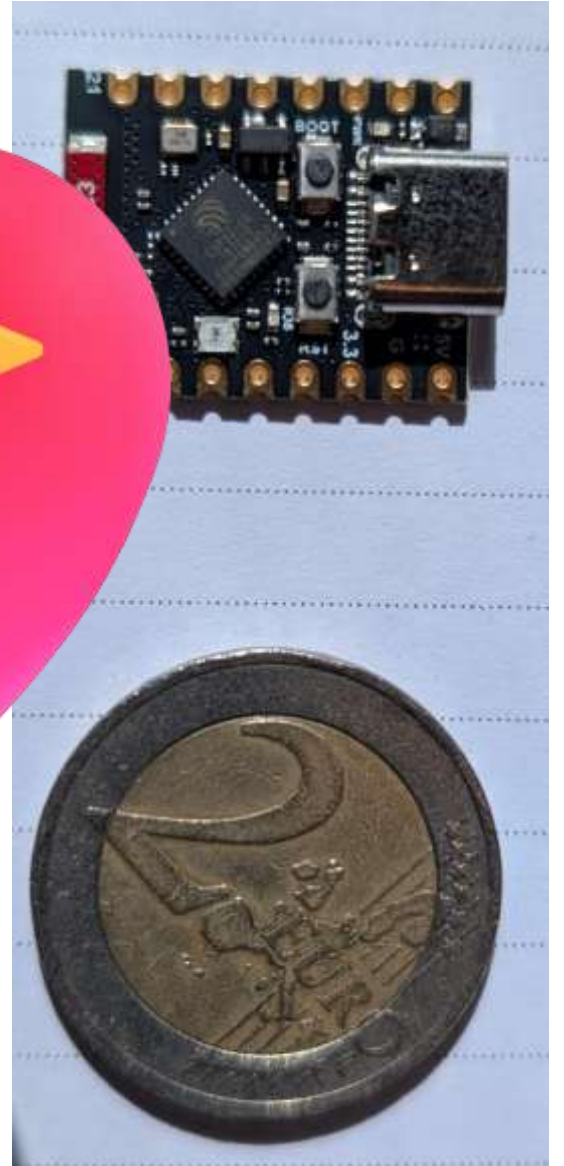
Cheap (€ 1 / 5)

Wifi, Bluetooth*, Zigbee*

Thread*

Several input/output

Built whatever you can
imagine!





Communication

1.



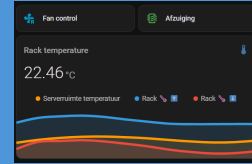
Sensors &
Devices

2.



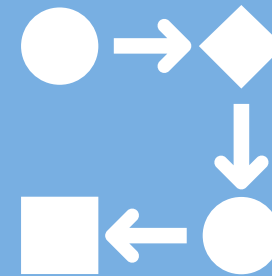
Home
Assistant

3.



Dashboards

4.



Automations

5.



Tips

6.



Home
Assistant

Home
Assistant

3.

Open source

**Supports all*
protocols**

Local control
(when possible)

**REST API &
Websocket**

Never commercial
protected by
Open Home Foundation

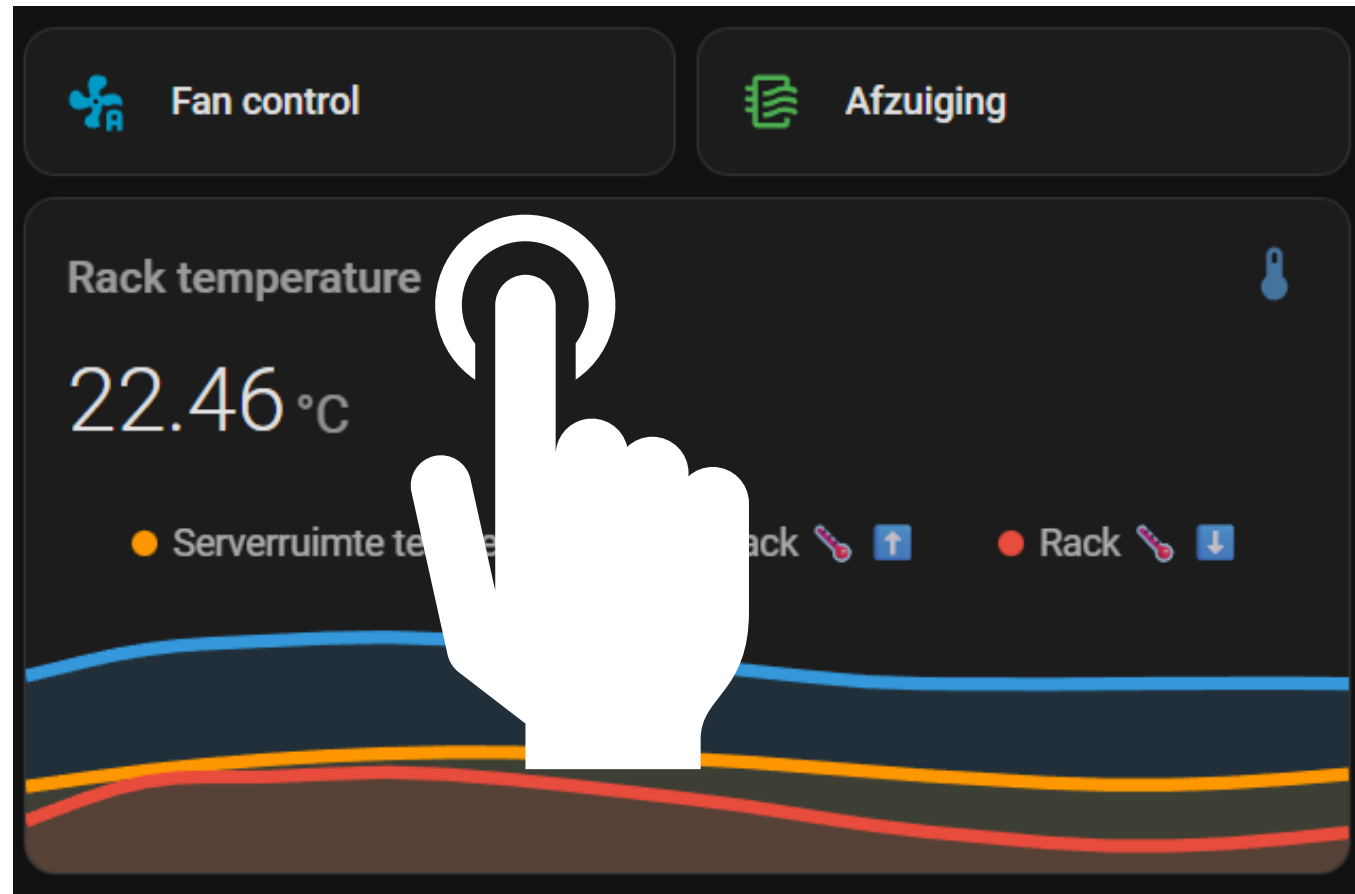


**Runs on “simple”
hardware**



Dashboards

4.





Communication

1.



Sensors &
Devices

2.



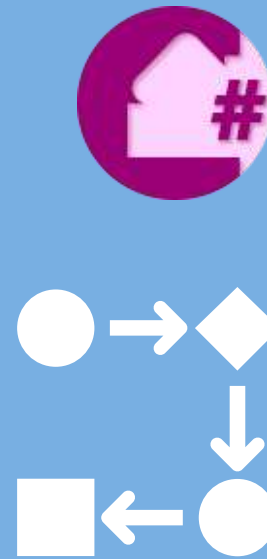
Home
Assistant

3.



Dashboards

4.



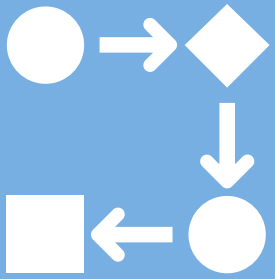
Automations

5.



Tips

6.



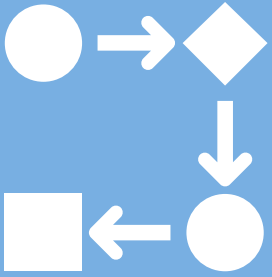
Automations

5.

Drag and drop

When x

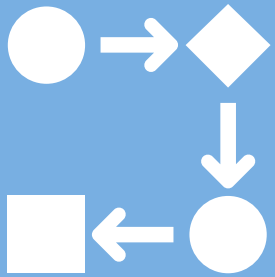
Do



Automations

5.

**When “Motion
detected”**
And if phone is not
charging
Do “Turn on Lights”



Automations

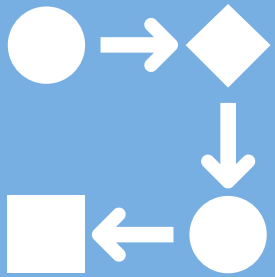
House chores

To-do list

Persistent notification

All devices

Dashboard



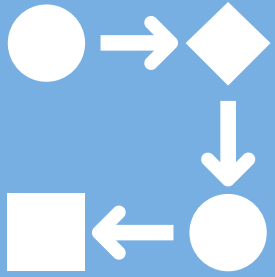
Automations

Clear laundry

Plug-in power meter

Detect Laundry finished

Create chore



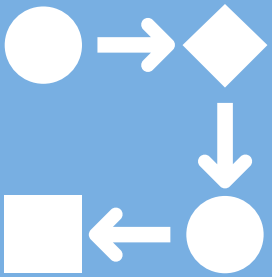
Automations

Frozen dog food

Door sensor

Task

Inventory tracking



Automations

Automate Home Assistant with C#

NetDaemon is a modern C# automation platform for Home Assistant. Powerful. Developer-friendly. Open source.



Home
Assistant



```
using System;
using System.Reactive.Linq;
using NetDaemon.AppModel;
using NetDaemon.HassModel;
using HomeAssistantGenerated;

[NetDaemonApp]
public class ExampleAppHaContext
{
    public ExampleAppHaContext(IHaContext ha)
    {
        var entities = new Entities(ha);

        entities.BinarySensor.OfficeMotion
            .StateChanges()
            .Where(e => e.New.IsOn())
            .Subscribe(_ => entities.Light.Office.TurnOn());
    }
}
```

C#



Home Assistant

```
public AfzuigingApp(IHaContext ha, INetDaemonScheduler scheduler)
{
    var entities = new Entities(ha);
    fanEntity = entities.Fan.VentilationFan;
    fanTimer = entities.Timer.Afzuiging;
    afzuigingNormaal = entities.InputNumber.AfzuigingNormaal;

    fanTimer.StateChanges()
        .Subscribe((x) =>
        {
            if (x.New?.State == "idle")
            {
                // load data from input_number
                var fanSpeed = afzuigingNormaal.State;

                // set fan speed
                fanEntity.TurnOn(percentage: fanSpeed.HasValue ? (long?)Math.Round(fanSpeed.Value) : null);
            } else {
                fanEntity.TurnOn(percentage: 75);
            }
        });
}
```



Halloween

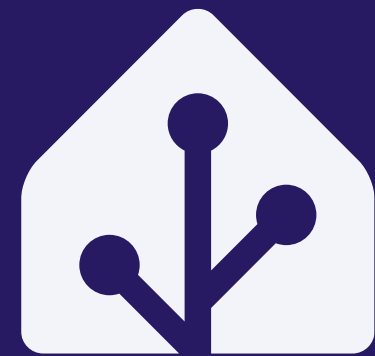


Home
Assistant

```
private void RandomToggleLight()
{
    var value = random.Next(0, 10);
    if (value < lampenOnder.Count)
    {
        lampenOnder[value].Toggle();
    }
}
```



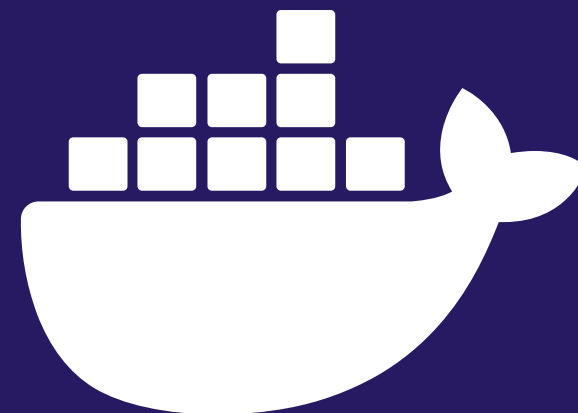
Runs in Docker



Home
Assistant



GitHub Action





Communication

1.



Sensors &
Devices

2.



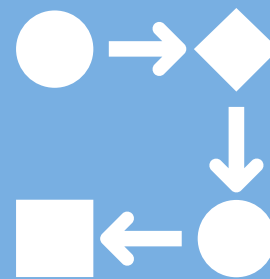
Home
Assistant

3.



Dashboards

4.



Automations

5.



Tips

6.

**The best
smarthome does
not require a phone**

1.

**Buy devices
with
local control!**

2.

**Install smart
buttons for wife
and visitors**

3.

**Start small
a few devices/rooms**

4.

**Test sensors
before buying
multiple**

5.

Setup zigbee bindings

6.

Be creative

plug-in energy to detect laundry

7.

**Try Home
Assistant**

&

NetDeamon

8.



**Home
Assistant**

Install HA app

**A ton of additional sensors
steps / charging / battery / dnd**

9.



Communication

1.



Sensors &
Devices

2.



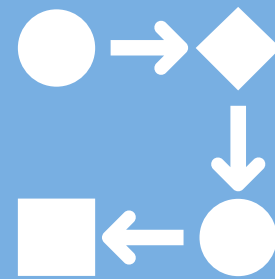
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Home Automation

Take your home automation to the (dot)next level 🤖



Stephan van Rooij

👉 svrooij.io 👉

“Thank you for
being awesome”

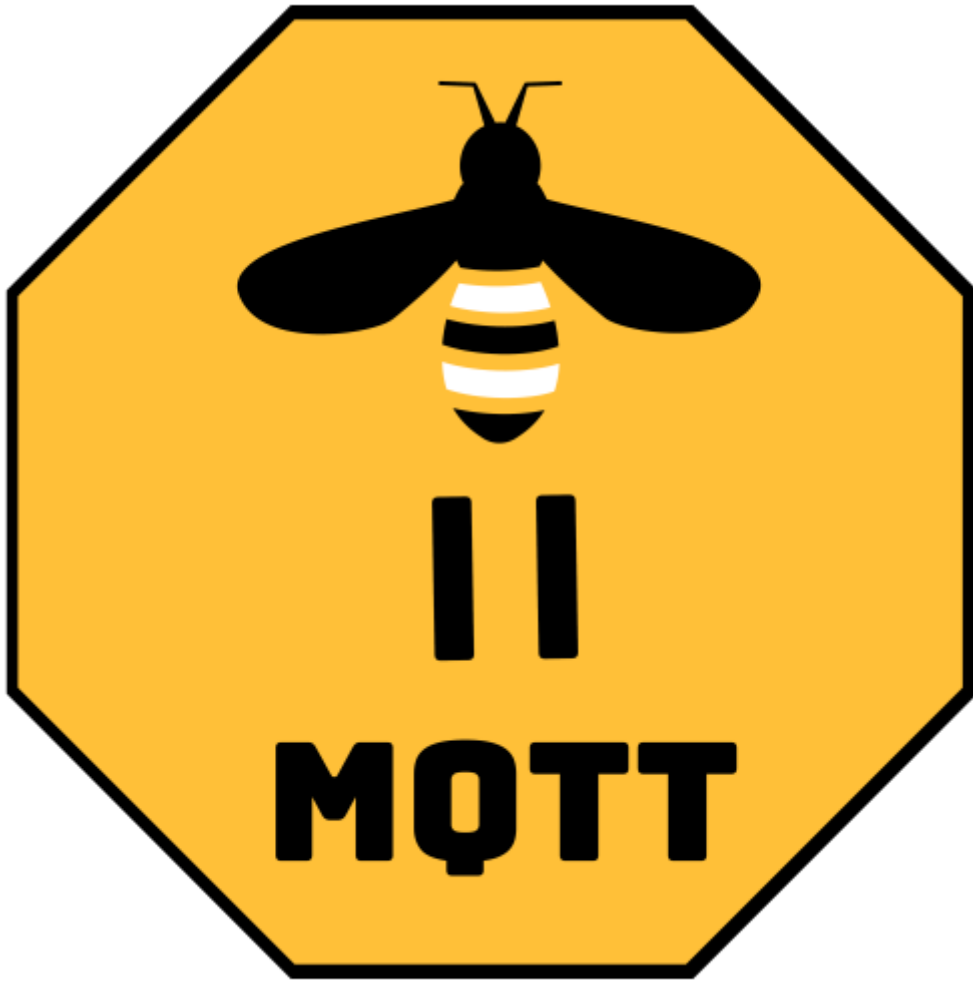


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<https://github.com/arjenhiemstra/ithowifi>



<https://www.zigbee2mqtt.io/guide/adapters/zstack.html>





<https://www.home-assistant.io/connectzbt1/>



matter

HOME COMPUTER MUSEUM



APPLE
ATARI
COMMODORE
IBM
NINTENDO

90s



APPLE
COMPAQ
IBM
LASER
MICROSOFT

**HOME
COMPUTER
MUSEUM**



**Noord
koninginnewal 28
Helmond**



**HOME
COMPUTER
MUSEUM**

GYMRACE



Naar de haaien

voor het HCM 10 okt

**HOME
COMPUTER
MUSEUM**

