

# Home automation

for hackers



# About me



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# Home automation in 2018

- Smart bulbs
- Smart thermostats
- Voice control
- Smart plugs/switches
- Smart locks
- More...



# Why not buy off-the-shelf?

1. Privacy
2. Security
3. Vendor lock-in
4. Custom needs
5. Less geeky
6. Iron man approves

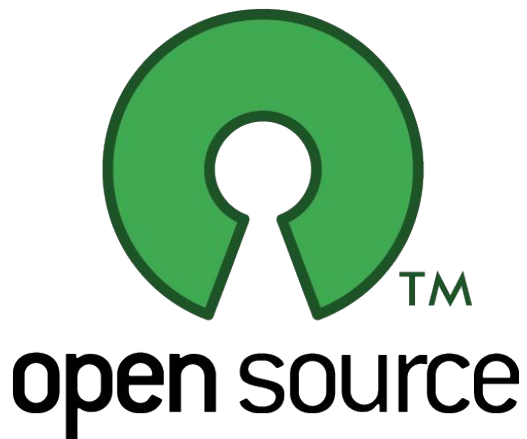
# Why not buy off-the-shelf?

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# Open source solutions

- openHAB (<https://www.openhab.org>)
- Home assistant (<https://home-assistant.io>) + Hass.io
- Calaos (<https://calaos.fr/en/>)
- More...



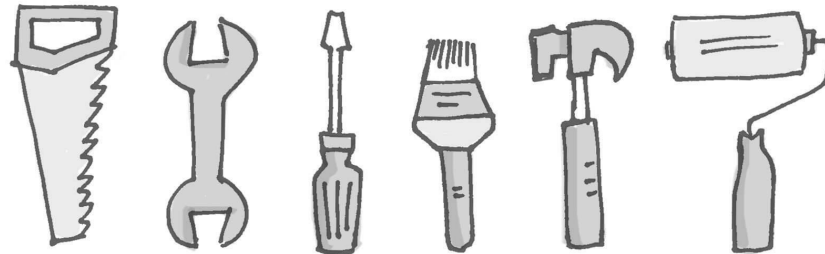


# Yet another application, but why?

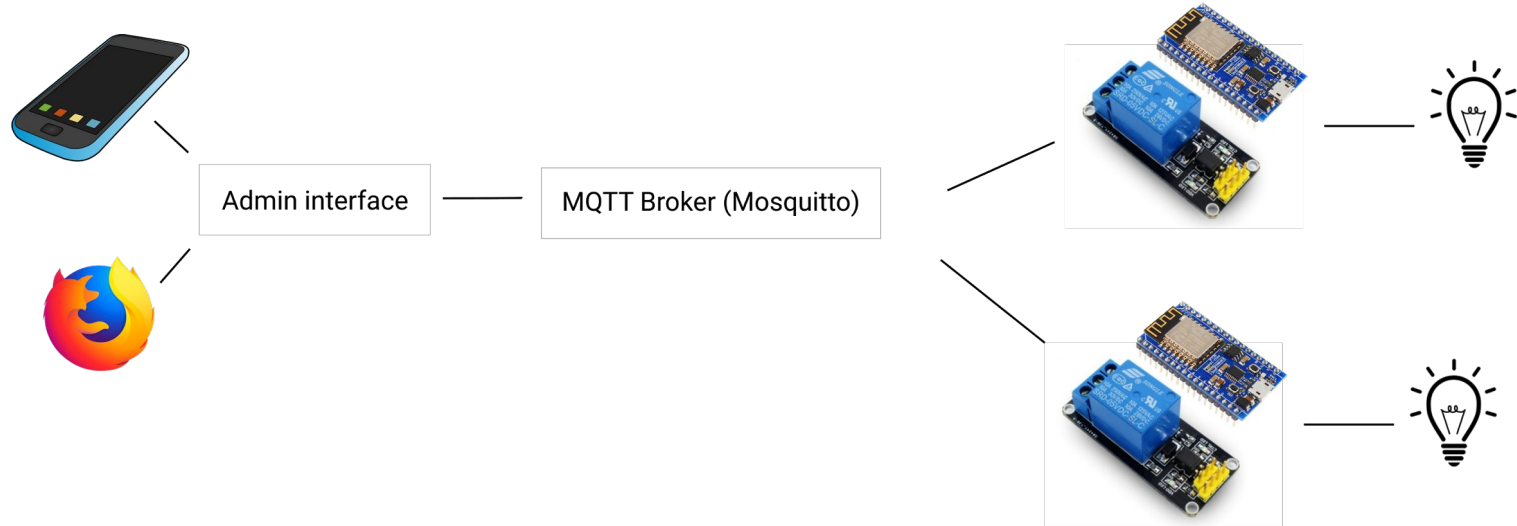
- Narrower scope
- Tailored to your needs
- Learning
- Because you can
- To appreciate the ready-made solutions later

# Tools of the trade

- MQTT
- Esp8266/Esp32
- Raspberry Pi
- Golang MQTT client (<https://github.com/eclipse/paho.mqtt.golang>)
- Esp MQTT client (<https://pubsubclient.knolleary.net/>)
- Basic electronics equipment



# App architecture

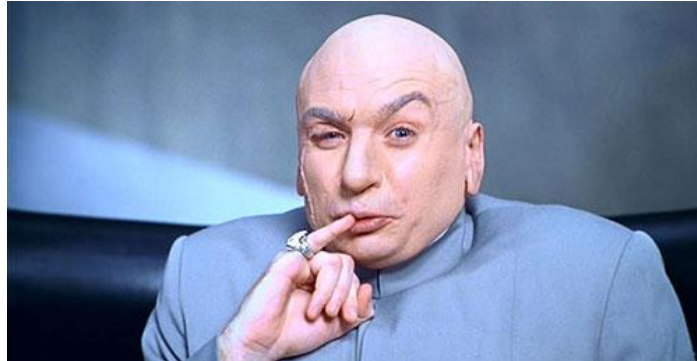


# Security

- Payload encryption (application level)
- Replay attacks (nonce)
- SSL/TLS (network level)
- Passwords
- Cloud hosting

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# Future work

- Additional endpoints (dimmers, locks, etc)
- Voice recognition (pocketsphinx, julius, etc)
- Smart lights based on presence, time of day, light sensors
- Water timers
- <Your idea here>



# Links

- [https://github.com/jimmykarily/smart\\_pie](https://github.com/jimmykarily/smart_pie)
- <http://forthesmarthome.com/home-automation-guide/>
- <https://opensource.com/life/17/12/home-automation-tools>
- <https://www.hivemq.com/blog/mqtt-security-fundamentals-payload-encryption>
- [https://en.wikipedia.org/wiki/Cryptographic\\_nonce](https://en.wikipedia.org/wiki/Cryptographic_nonce)

Thank you!