

A tiny self-contained piece of (home)automation infrastructure

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1*  + many  + OpenWrt +  +  +  + 

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about me / motivation

- independent hard- and software developer for (home)automation "things"
- many different setups and use cases - art, theater, exhibitions but also plain home/office.
- don't like wasting, in particular not my time solving the same problems again later
- need toolset to keep those "things" running for a long time, efficiently
- Hope others can make use of it too, now it's in a presentable state



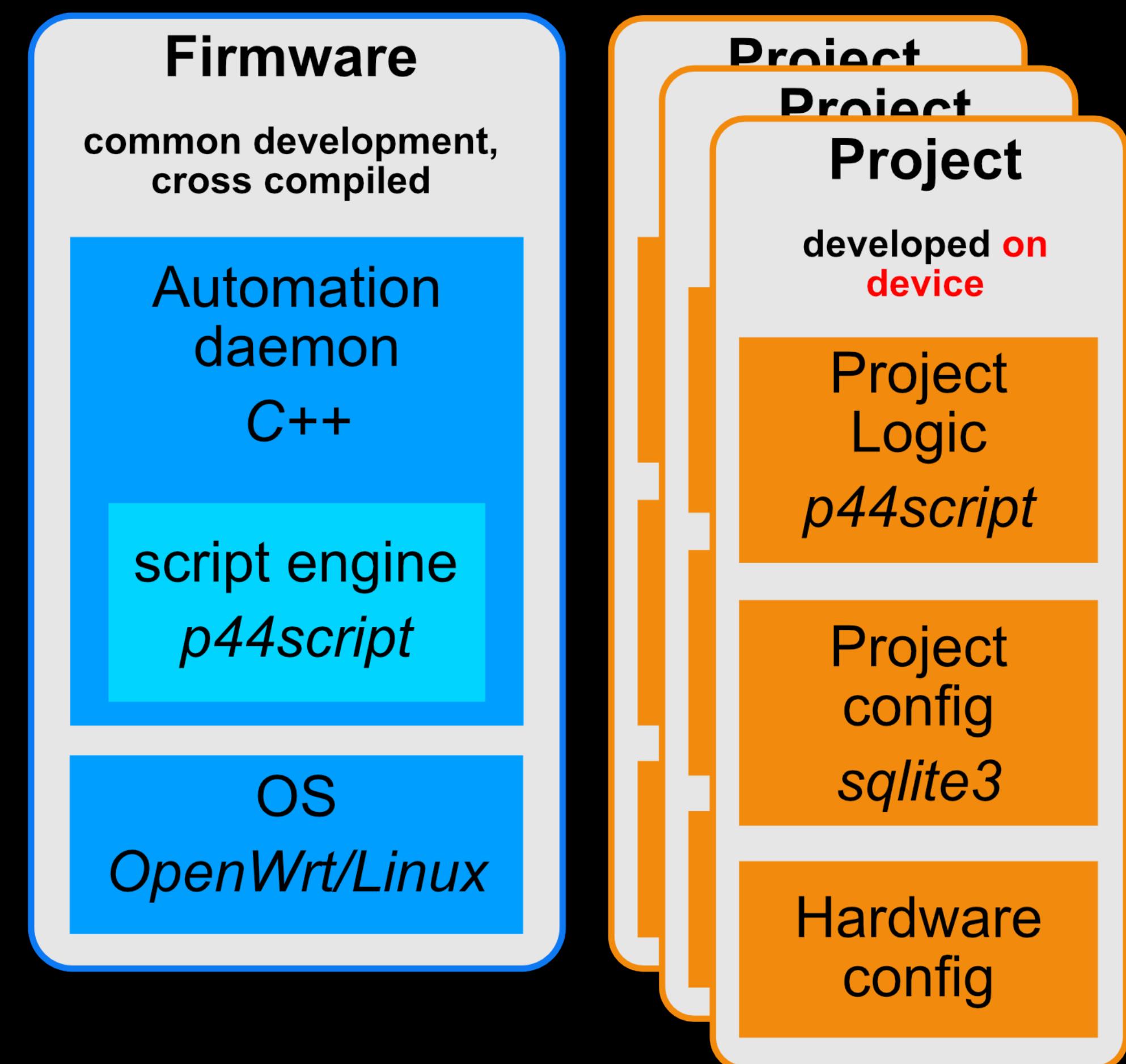
challenges

- long term maintainable (think: maybe decades)
- no-go: external dependencies
- but: not frozen! Deploying firmware improvements to older projects must be possible.
- Decent network support, for remote access/maintainance



approach

- projects all use the same **firmware (platform)**
- adaption to hardware variants in **configuration**, not in the firmware
- rich toolset & interface support in the **common firmware**, I/O, networking, persistence etc.
- all **project logic is in scripts** that can be developed, live-tweaked, debugged and maintained **locally on the target**, and backed up easily.



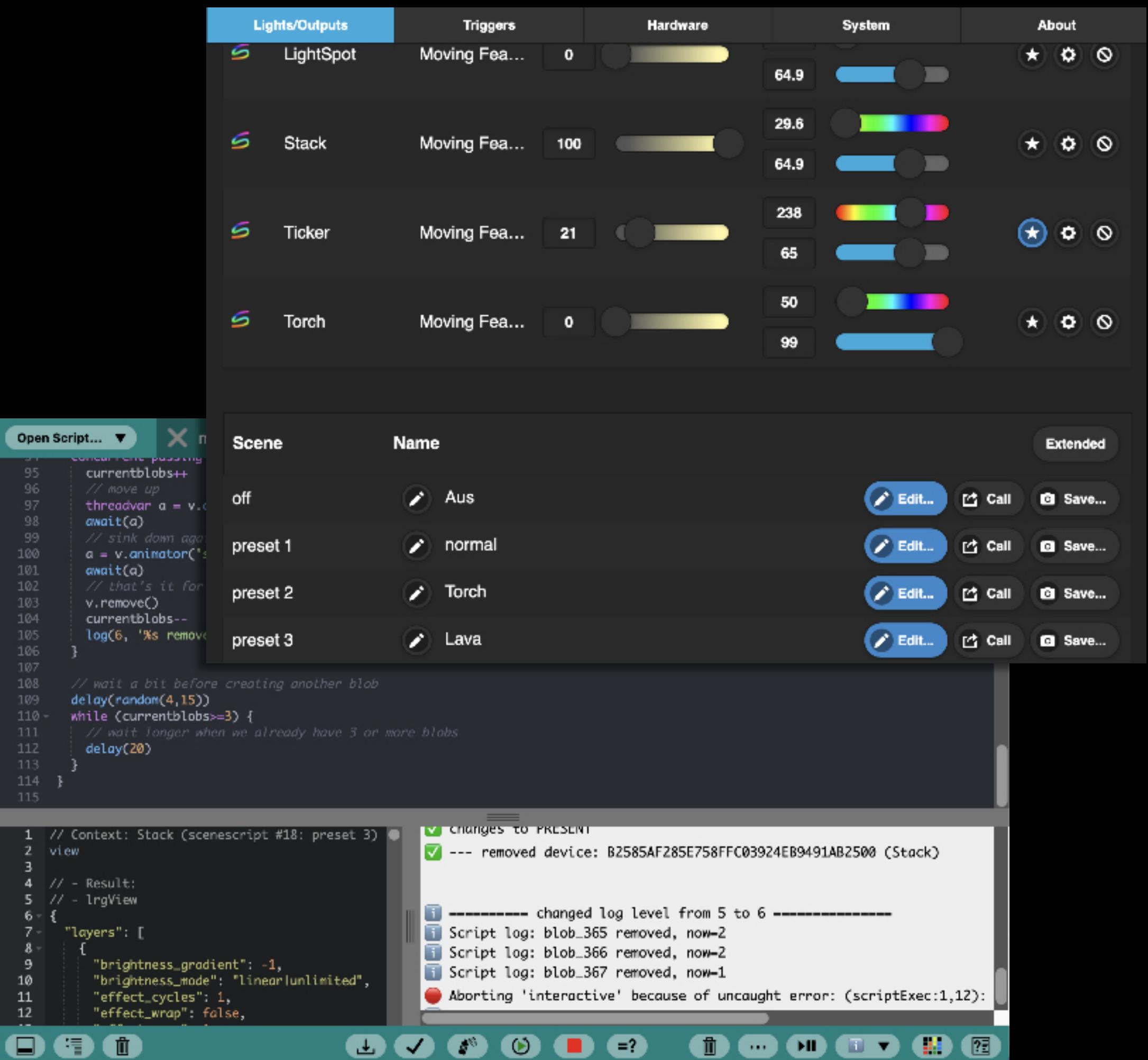
long term, steady,
backwards compatible
development

quick, ad-hoc, **on-device**,
tweakable/maintainable,
small backup/archive

components

- OpenWrt/Linux base OS
 - rich tooling, superb support for anything network
 - designed for 24/7, tiny footprint
- event driven daemon with home automation data model and JS-like scripting engine.
- WebUI:
 - User interface (sliders, lights, sensors, rooms, ...)
 - Developer interface (IDE - editor, debugger, simulator)
- Subsystems:
 - sockets, motors, modbus, websocket, midi etc.
 - graphics for WSxx LEDs, smooth scrollers, tickers etc.
 - Special case "features": RFIDs, splitflaps, Wifitrack
 - matter bridge daemon for smarthome integration

Runs in 64MB RAM/16MB Flash, ~1W Power



features

A circular word cloud centered on the word **p44script**, listing various features and technologies. The words are arranged in concentric circles around the center word.

Outer Ring:

- motors
- glowdim
- rooms
- rrdb
- animators
- gradients
- rotary encoder
- power limiter
- dmx512
- move/zoom
- subpixel
- modbus
- scenes
- http
- ws28xx
- enocean
- png
- tickers

Middle Ring:

- webui
- ethernet
- wifi
- Custom fonts
- pwm
- leds
- analog inputs (A/D)
- gpio
- hsv
- color
- splitflaps
- layers
- SPI
- I2C
- sockets
- stepper
- json
- linux

Inner Ring:

- OpenWrt
- rfid
- matter
- gamma curves
- dmx512
- modbus
- scenes
- http
- ws28xx
- enocean
- png
- tickers
- color
- splitflaps
- layers
- SPI
- I2C
- sockets
- stepper
- json
- linux

resources & contact

<https://github.com/plan44/p44-xx-open>

- Ready to use images for Omega2 and Raspberry
- Full source for complete OpenWrt distro build
- Sample PCB (KiCAD) for Omega2 based LED+DMX/Splitflap controller

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