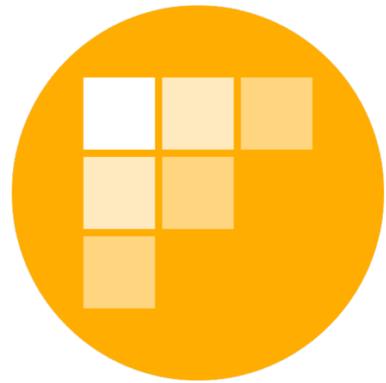


trx-control

**Modern Client/Server-Software for the Control of Amateurradio-
Transceivers and Other Devices and the Integration of Third Party Systems**

Marc Balmer HB9SSB, February 4. 2024, FOSDEM 2024, Brussels

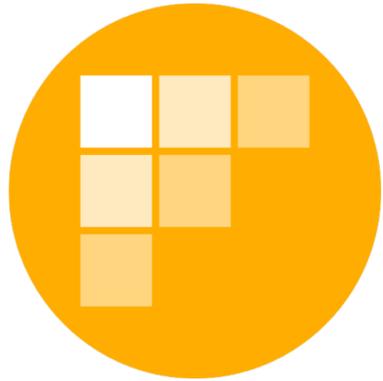


The Idea

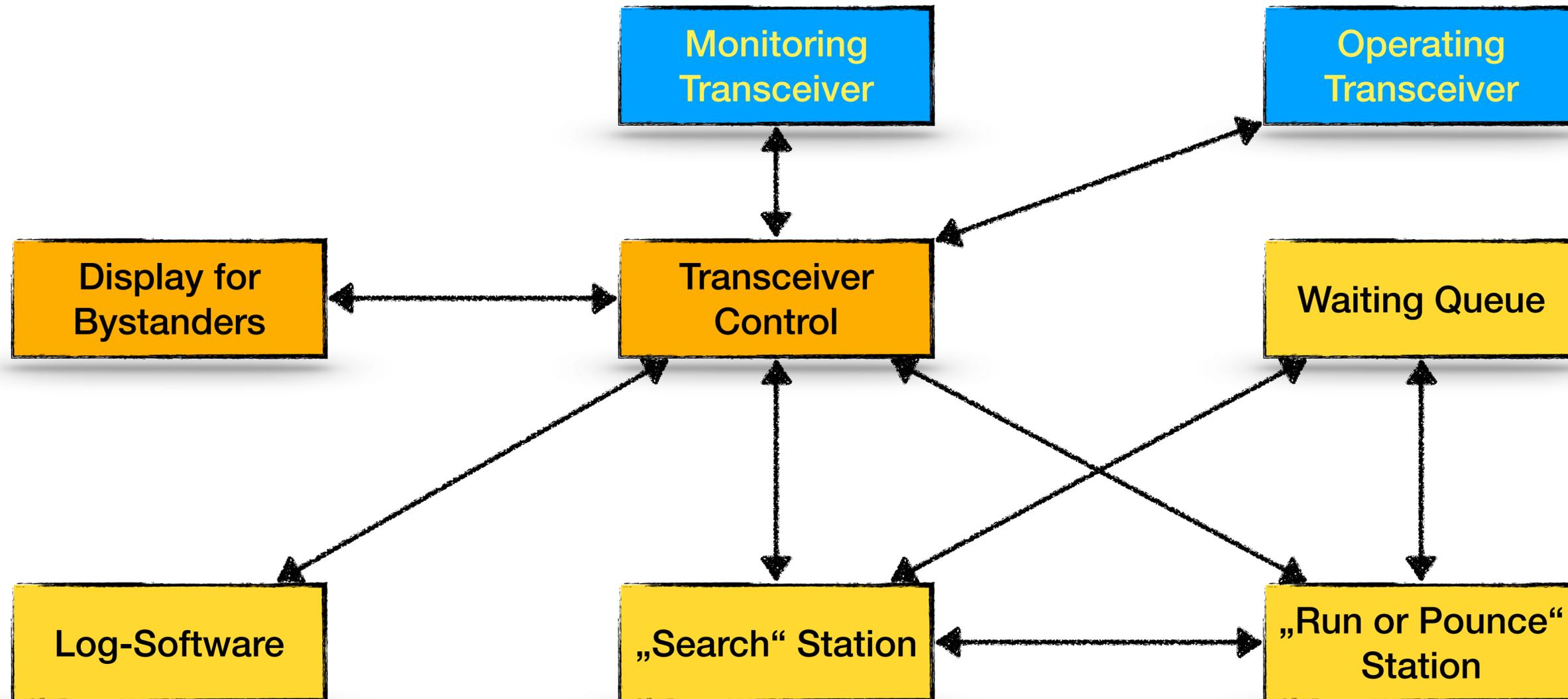
Swiss SSB Fieldday 2023

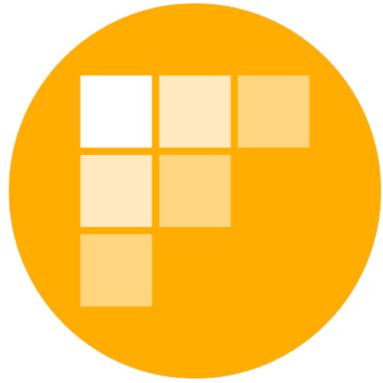
- One Operator
- A helper notes call signs
- BBQ, Talks, chatting and having a bit of fun
- HB9AG was ranked fourth of seven
- **Here we had the following idea...**





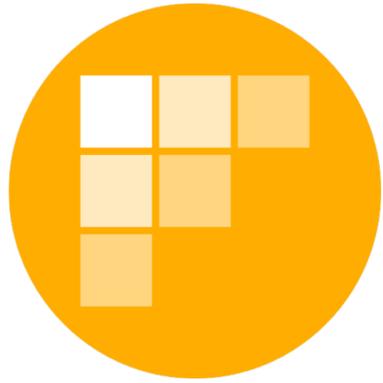
Run or Search and Pounce? – Search and Run or Pounce!





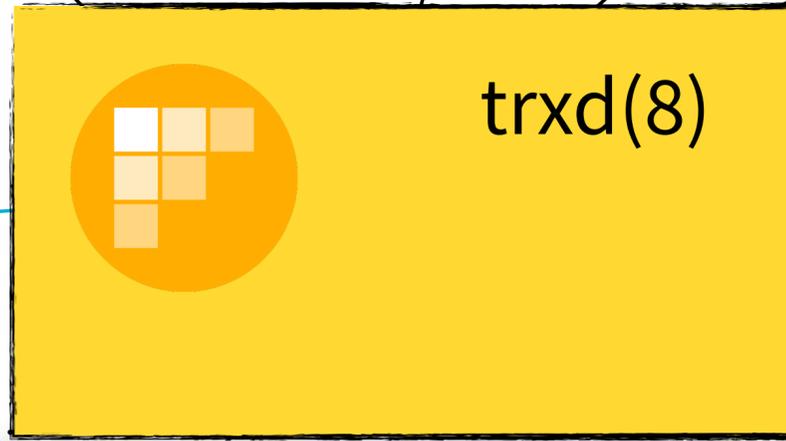
At the Core: Universal Device Control

Transceiver, GPIO-pins, USB-relays, rotors, antenna-switches, extensions, ...

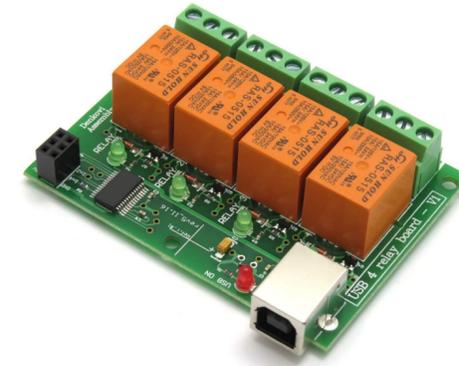


Rotors

Transceivers



Relays

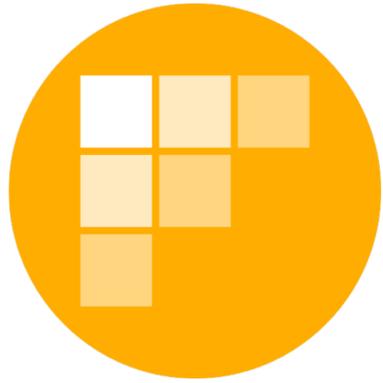


Network

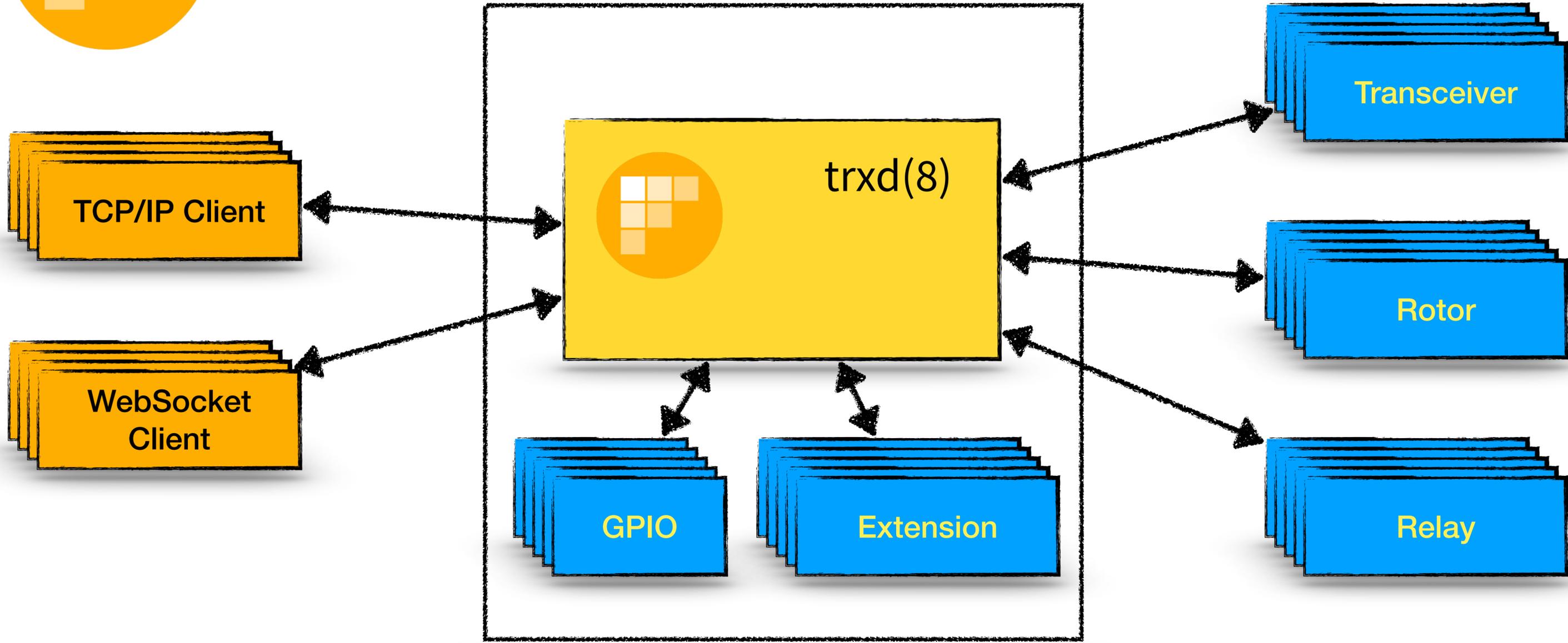
GPIO-pins

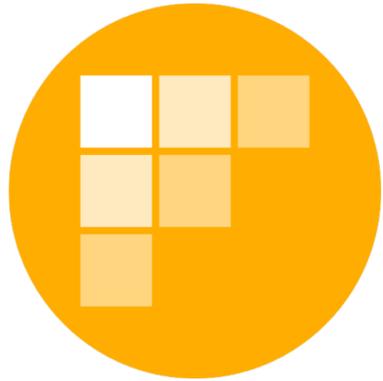


Various clients



Linux-Computer, e.g. Raspberry Pi

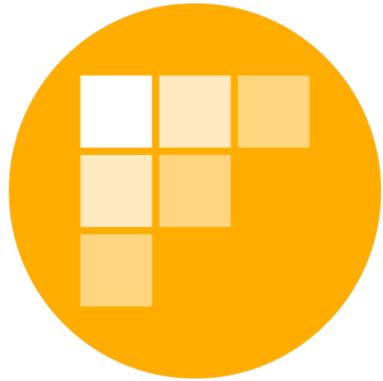




- trxd(8) accepts requests from clients and controls the devices.
- **Changes in the operating state (e.g. frequency changes) can automatically be transmitted by trxd(8) to the connected clients. The whole system can be operated from the transceiver as well.**

- This works as well for devices that do not support this functionality out-of-the box.



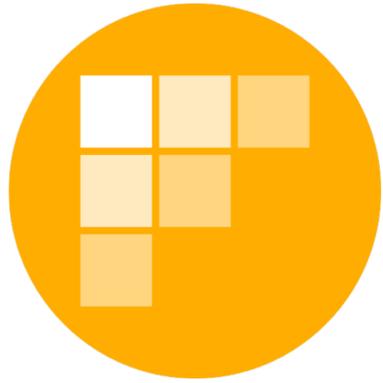


Goals

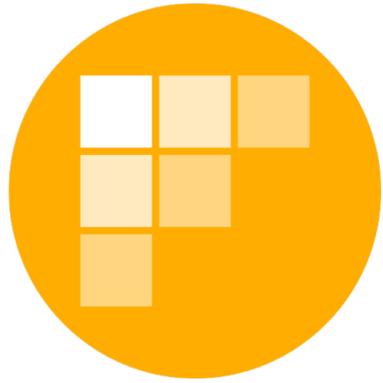
Modular and extensible

- trx-control provides a solid and modern framework for device control.
- New classes of devices can easily be added.
- Simple addition of new drivers.
- Extensible from the ground up.
- Complete documentation.

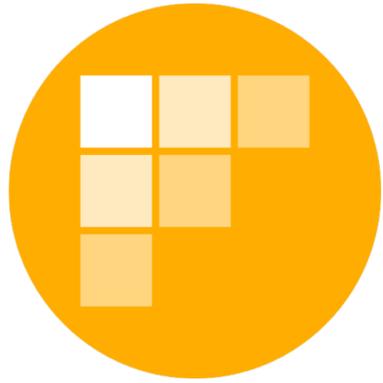




An open software design that is extensible and uses accepted standards.



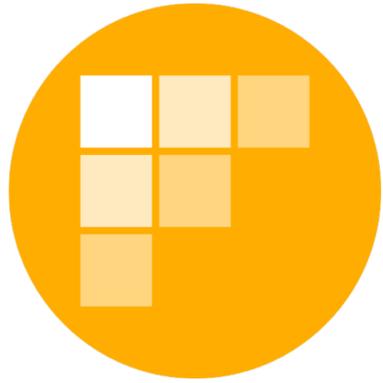
Writing new drivers is done in an easy to master scripting language.



Supported Transceivers

As per December 2023

- Yaesu FT-710 (CAT 2nd gen.)
- Yaesu FT-897 (CAT 1st gen.)
- Yaesu FT-817 (CAT 1st gen.)
- ICOM IC-705 (CI-V)



Audio

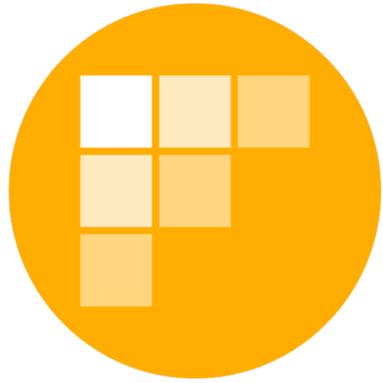
Covered by existing and specialized software:

- Audio Processing: PipeWire
- Audio Streaming: PulseAudio



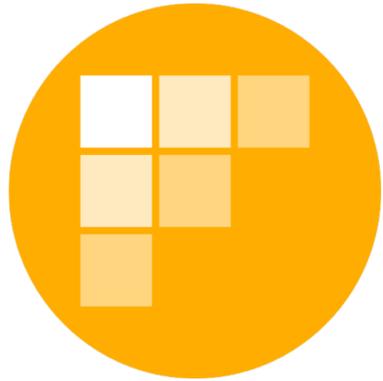
PulseAudio

trx-control + PipeWire + PulseAudio = A remote transceiver solution?



Implementation Details

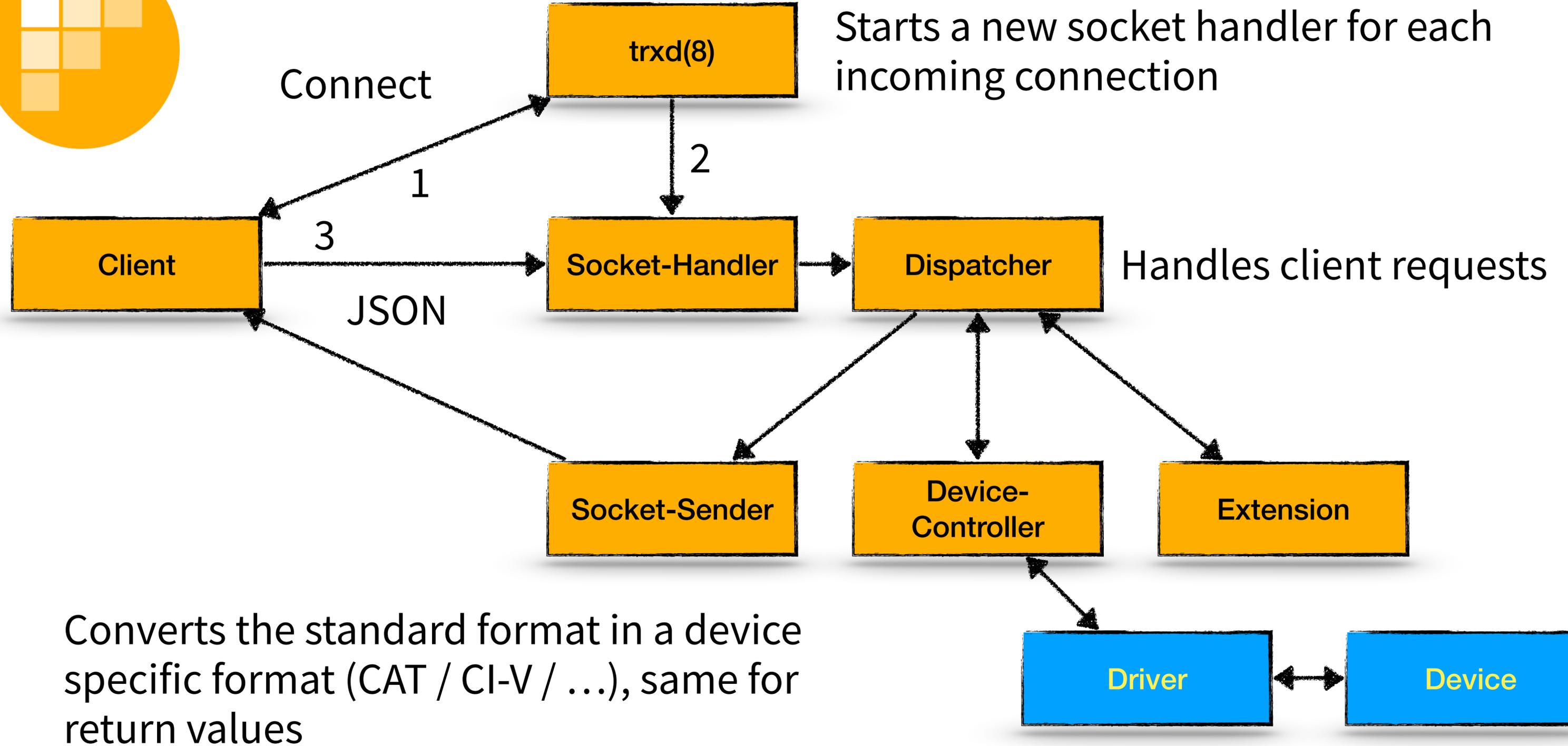
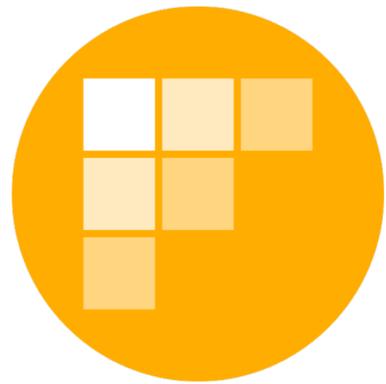




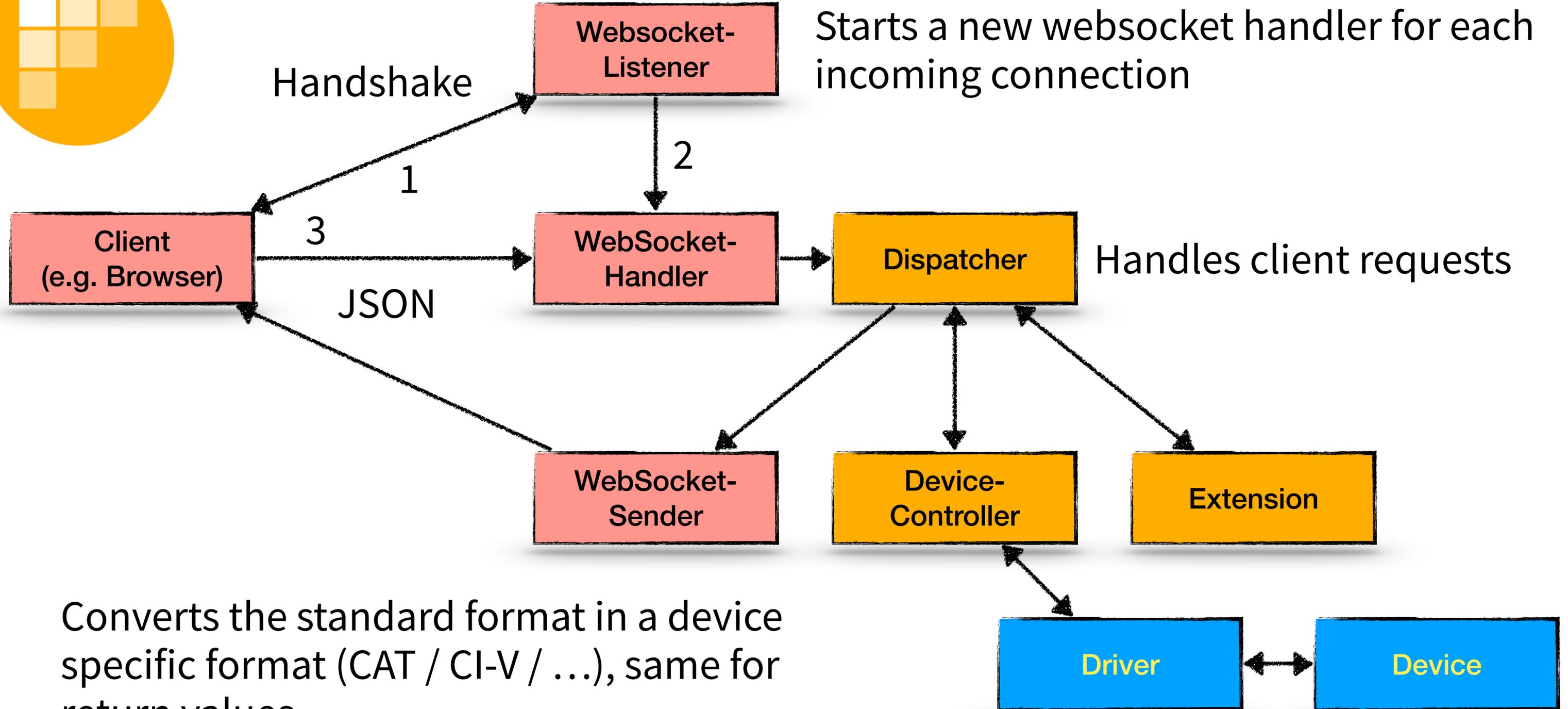
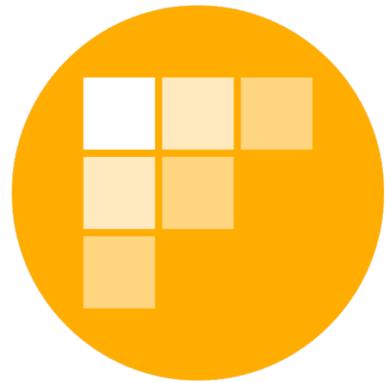
trx-control Quick Facts

- Modern „multi-threaded“ design (uses all CPU cores)
- Asynchronous execution
- Supports IPv4 and IPv6 and TLS
- Core in C (network, thread-control, synchronization), logic and drivers in Lua
- Connection over IP- or WebSockets
- JSON based protocol
- Developed for Linux
- Can be used on Windows using WSL
- Docker image
- Open development (GitHub)
- Open source (MIT-license)

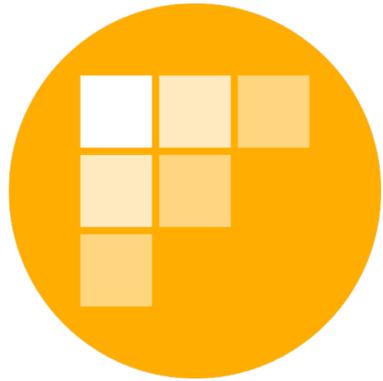
TCP/IP Socket-Connection



WebSocket-Connection



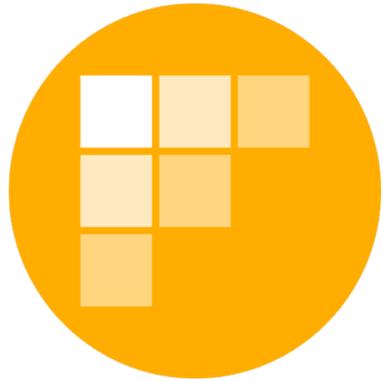
Converts the standard format in a device specific format (CAT / CI-V / ...), same for return values



Supporting trx-control

Become a trx-control supporter

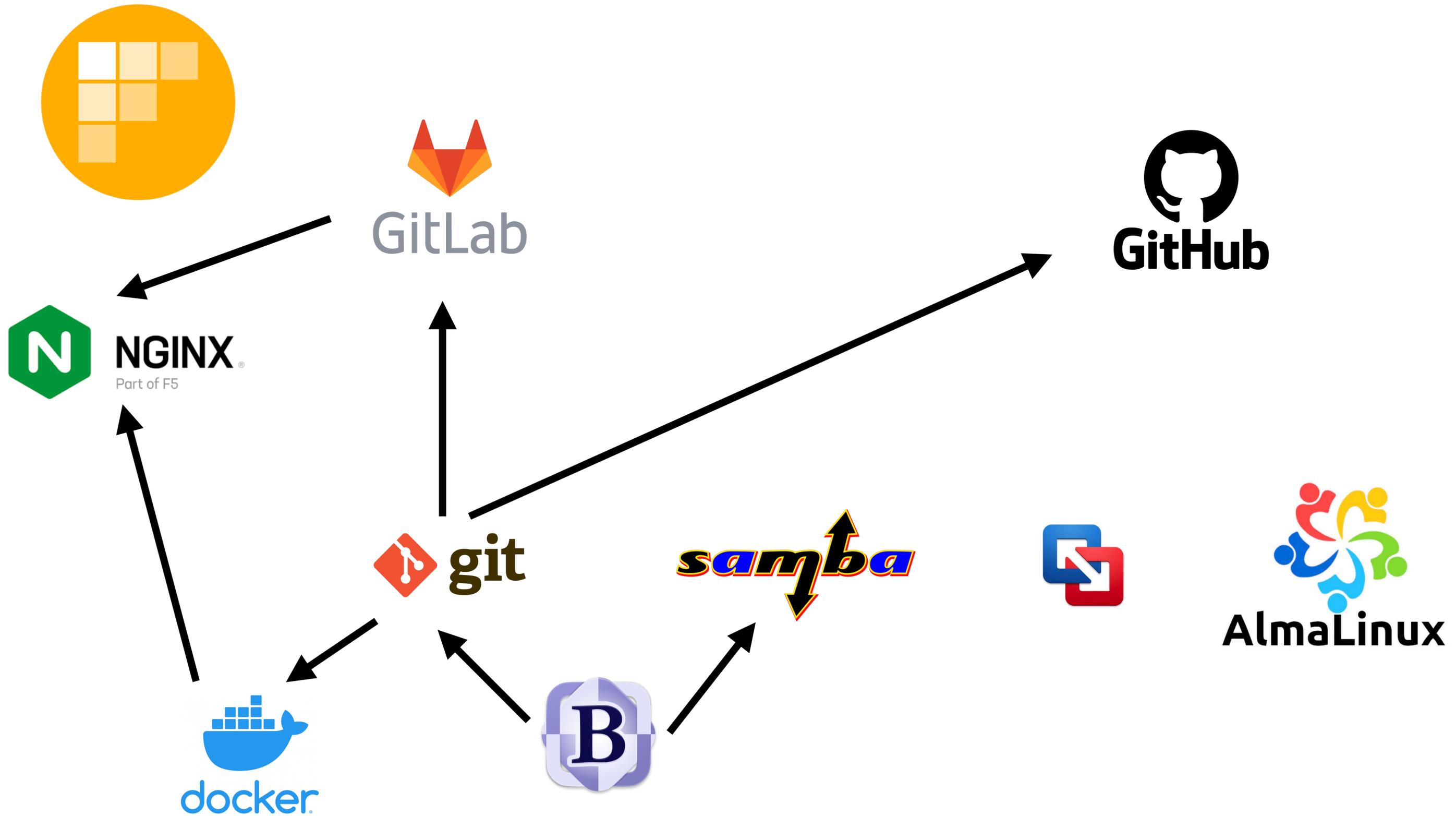
- **Linux-users:** Build and test the software.
- **Software-sevelopers:** Write (and maintain!) drivers or clients.
- **Manufacturers, dealers, importers:** Donate Hardware and devices to the project.
- **Everyone:** Financial and material support (can be purposeful).

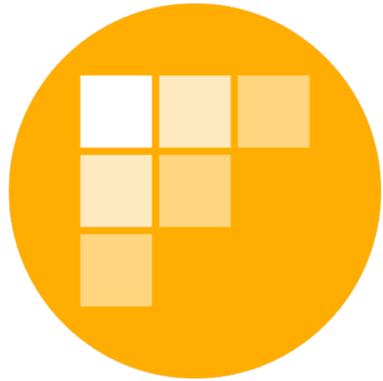


Sponsors and Supporters

Many thanks!

- **micro systems:** Developer resources, hosting, equipment (Yaesu, Rohde & Schwarz).
- **LIXNET:** Discount on an ICOM IC-705 development- and demount.





<https://trx-control.msys.ch>

<https://github.com/hb9ssb/trx-control>

#trx-control:matrix.org

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