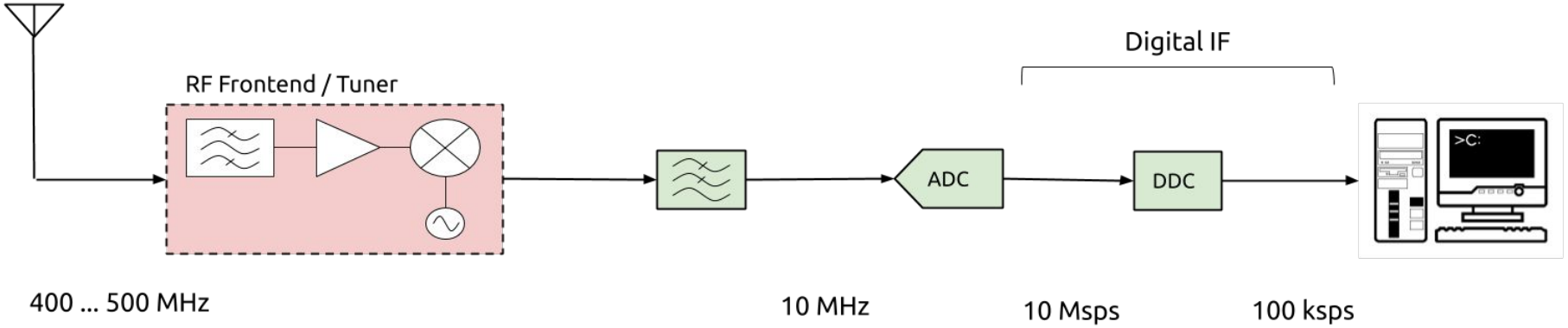
Open-Source Software Defined Radio for CubeSat Operations

Alexandru Csete

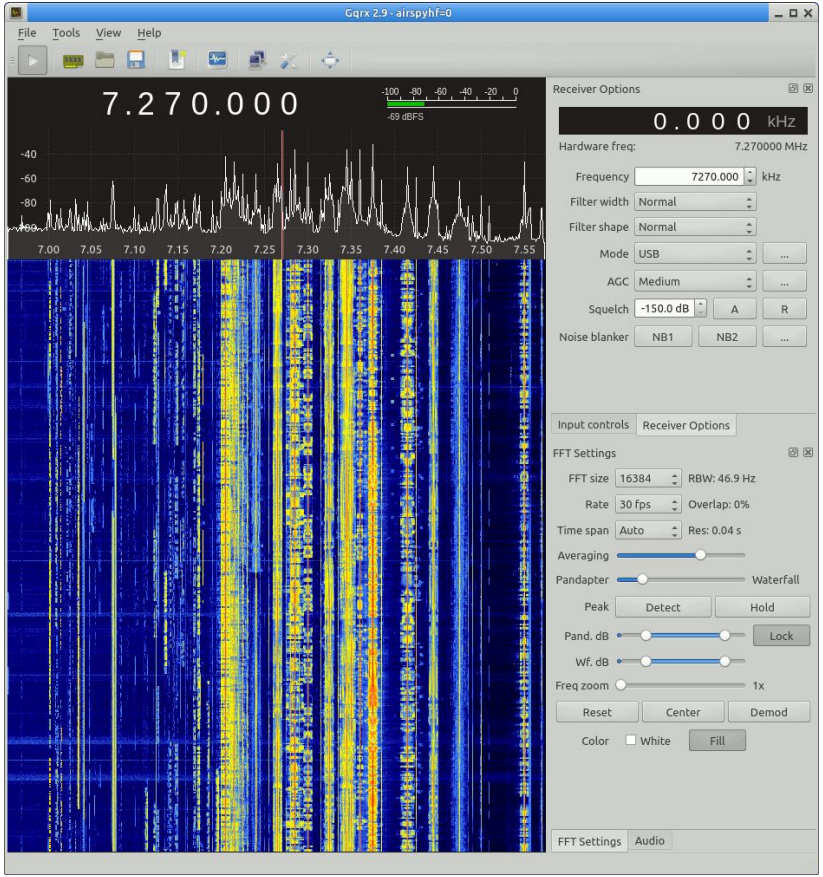
Software Defined Radio (SDR)



Do as much as possible in software (flexibility)

Gqrx SDR Receiver

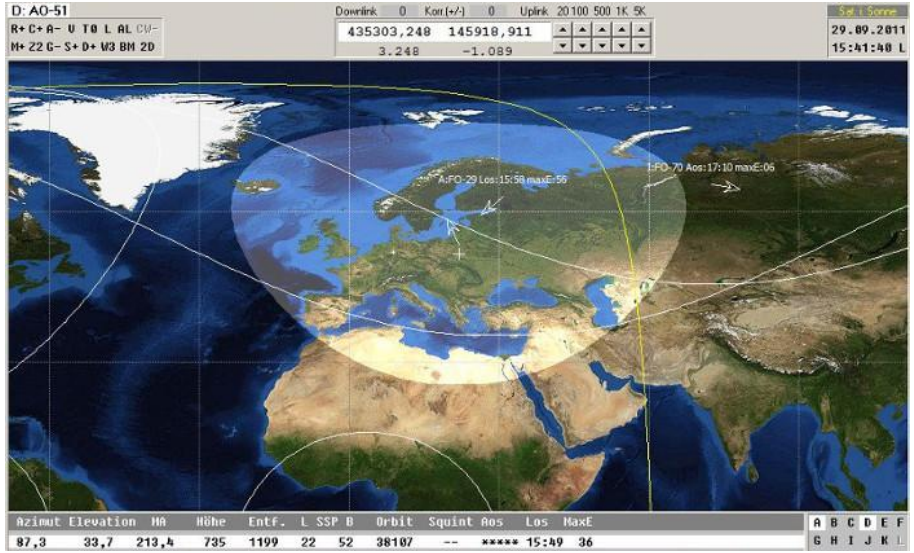
- 2011-2018
- GNU Radio & Qt
- Broad HW support
- Linux, BSD & Mac
- Raspberry Pi 3



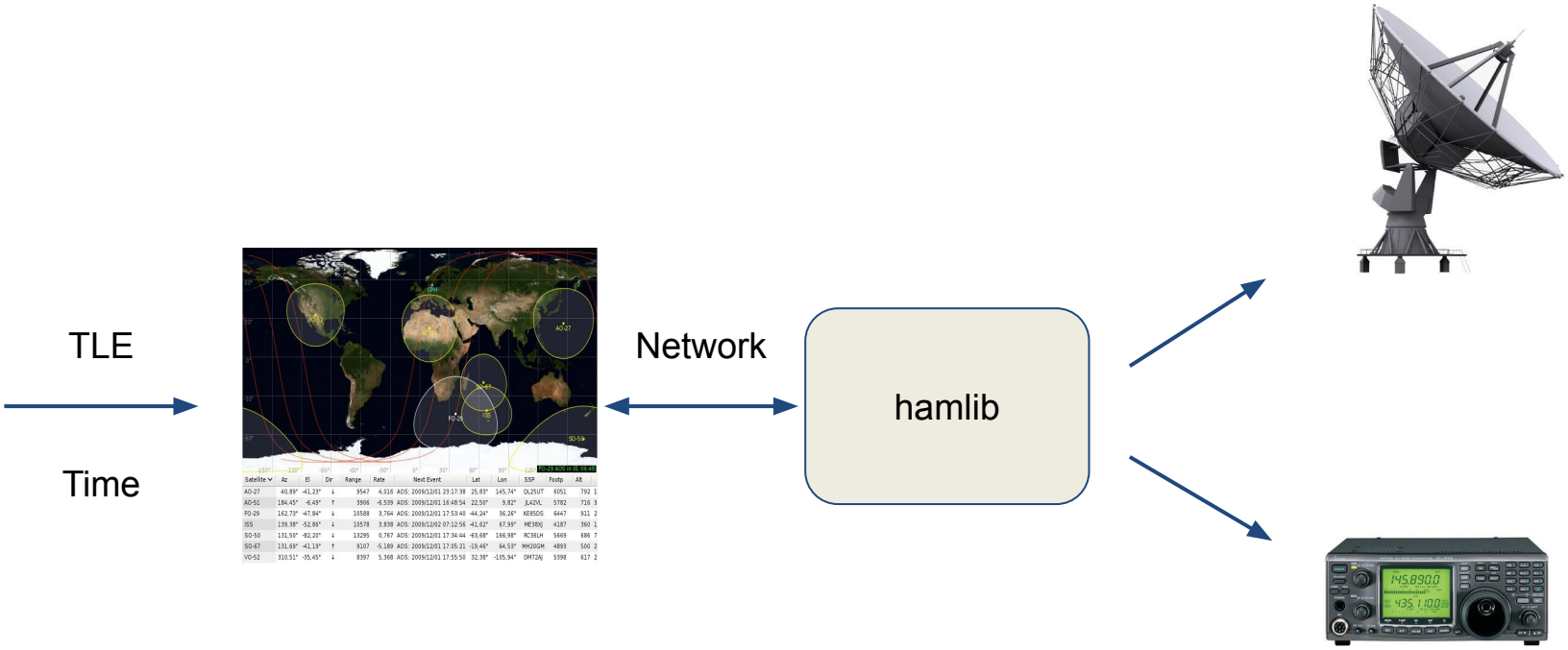
Satellite Tracking (Windows)

TLE

Time



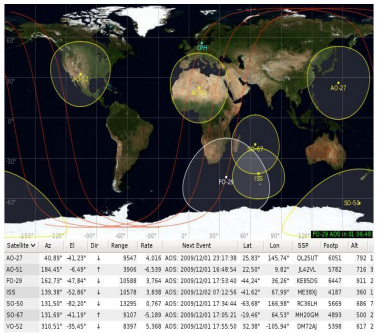
Satellite Tracking (Linux)



Satellite Tracking (Gqrx or SatNOGS)

TLE

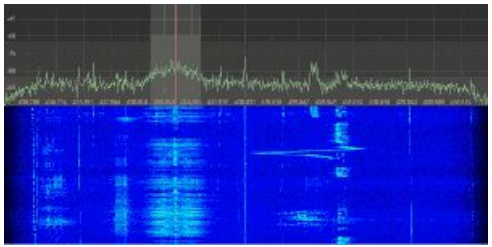
Time



Network

hamlib

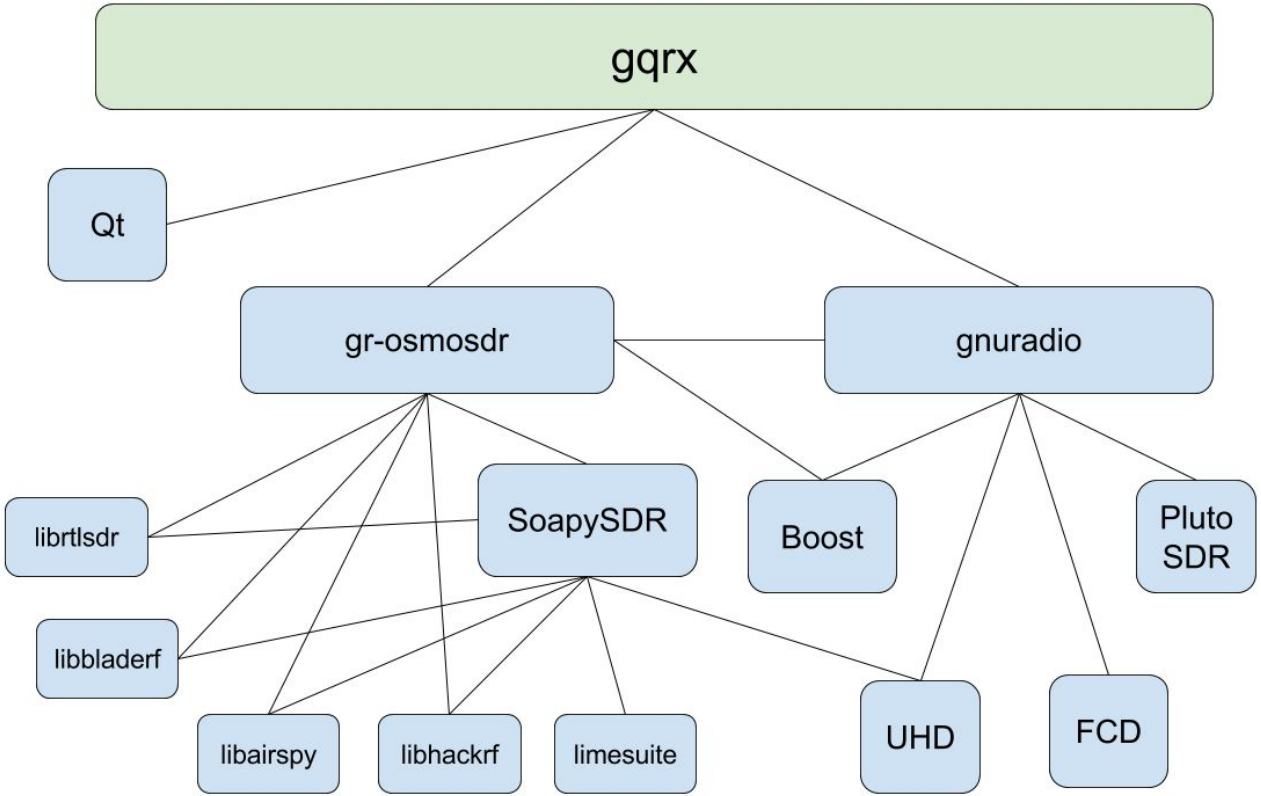
Network



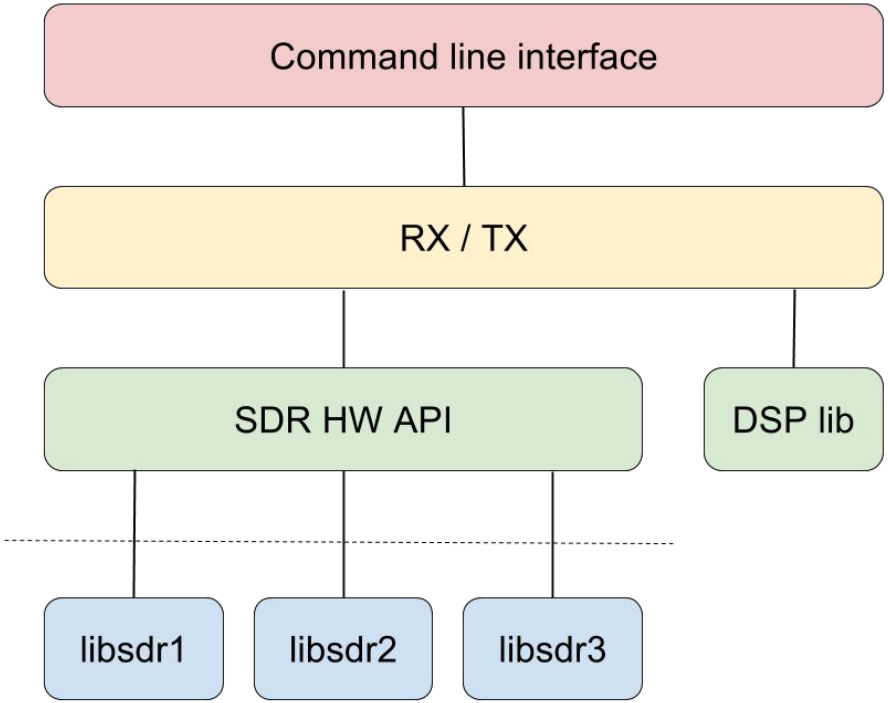
SDR for Satcom Wishlist

- Graphical console application (interactive)
- Command line application (unattended)
- Server + client (remote)
- Receive and transmit

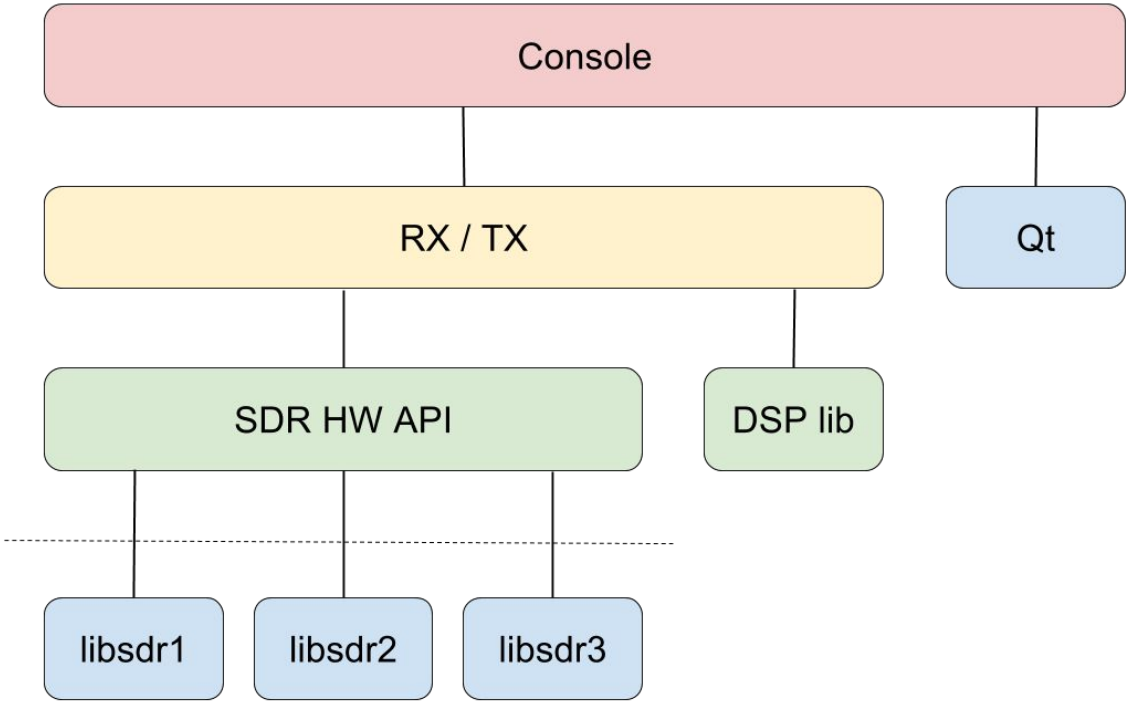
The Problem with Gqrx



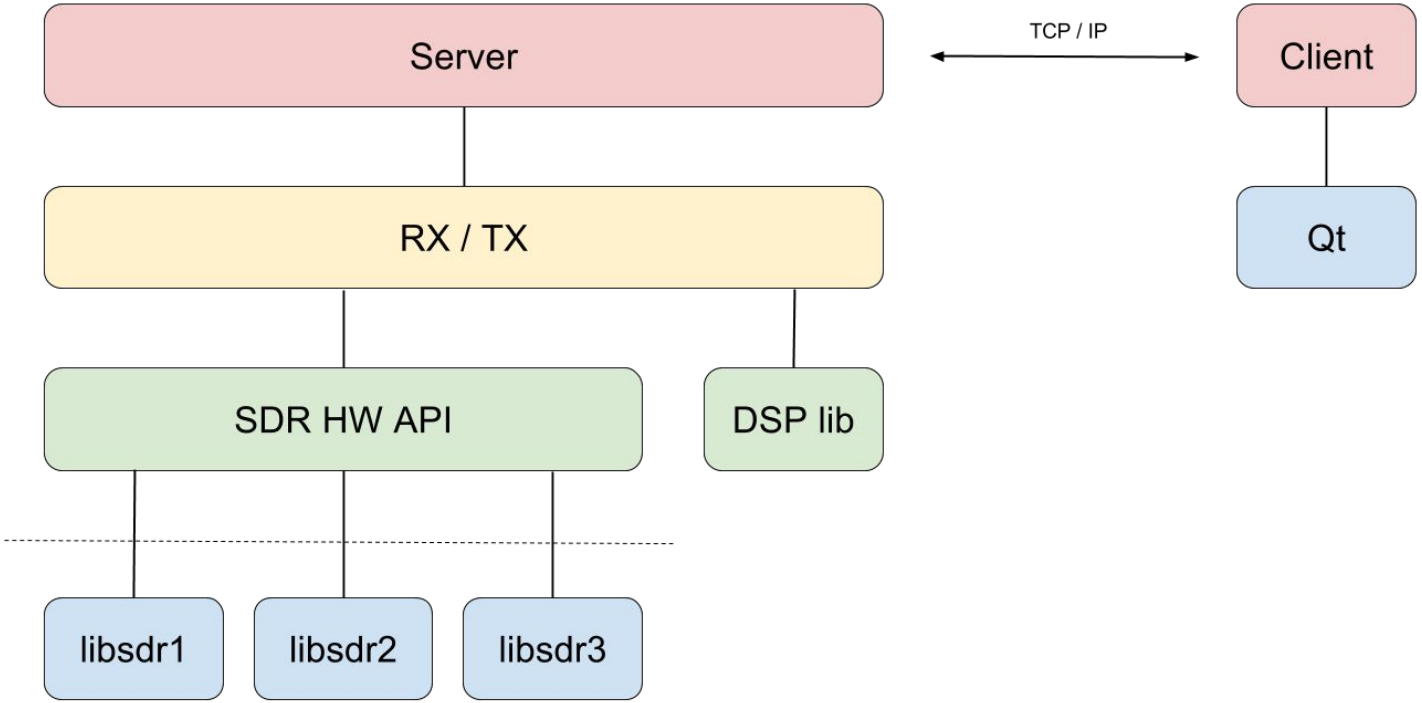
Command Line Tools



Graphical Console Application

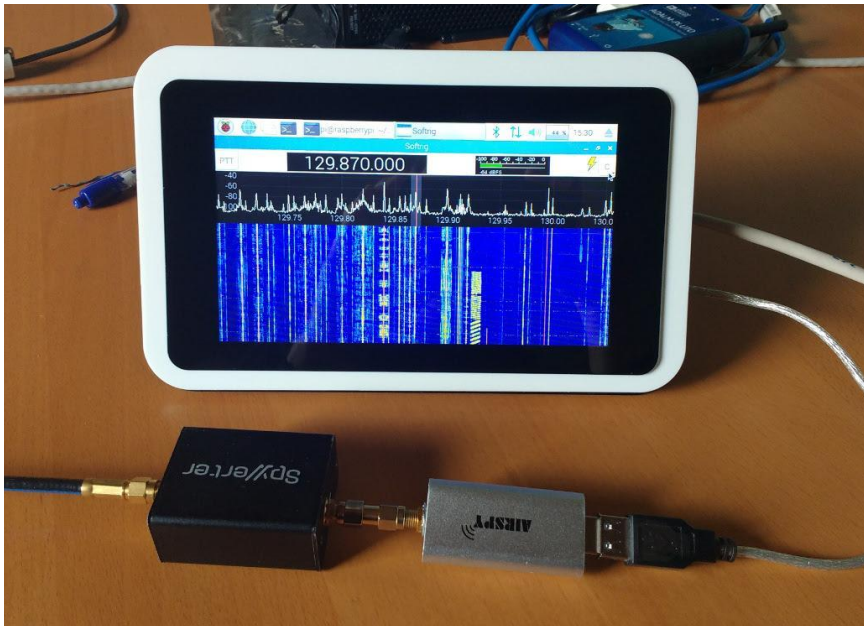


SDR Server and Client

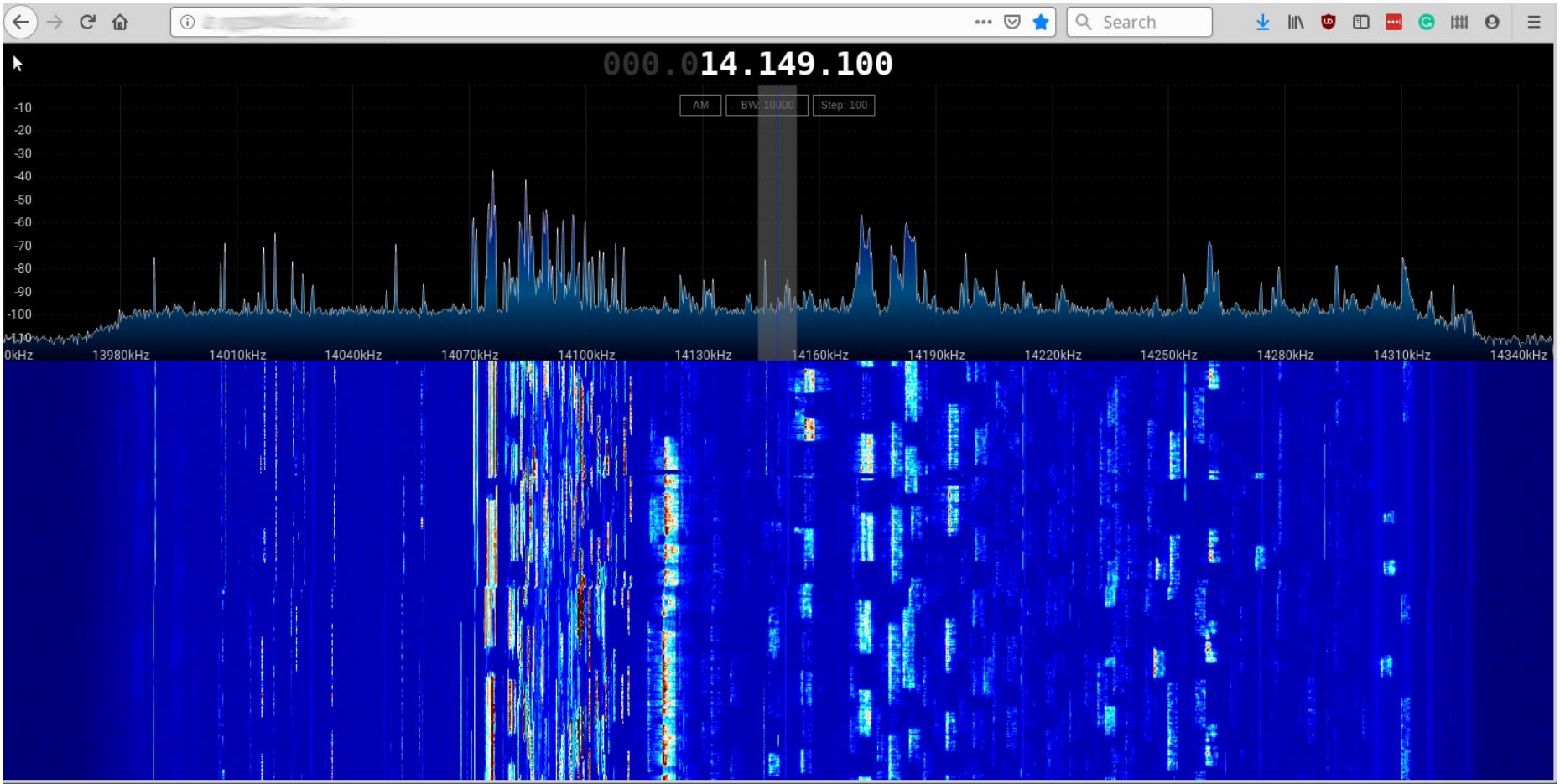


Current Status (WIP)

- Command line receiver (SatNOGS station #13)
- Console receiver (SDR Makerspace)
- RTL-SDR, Airspy, SDRPlay
- LimeSDR, BladeRF, USRP
- Next: USRP and PlutoSDR



Websdr by Ian MM0DOS



More info (soon)

https://gitlab.com/csete/softrig

https://gitlab.com/csete/nanosdr

https://groups.io/g/nanosdr