Phase 4 Project Update

For Escondido Amateur Radio Society

10 May 2018

Who are we?

What do we do?

Why should you care?

What are we doing about it?

What does the overall system look like?

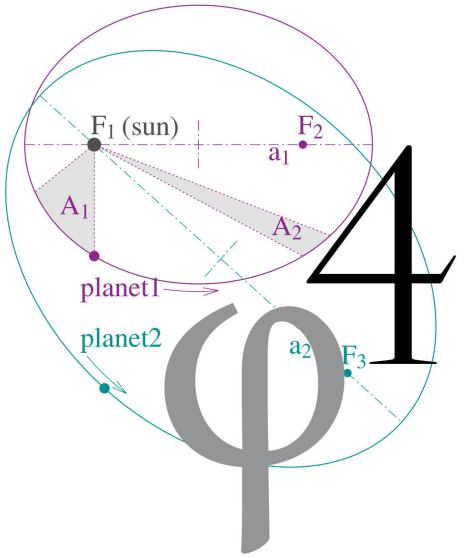
What is the team doing?

What do we need?

What are the plans for a finished product?

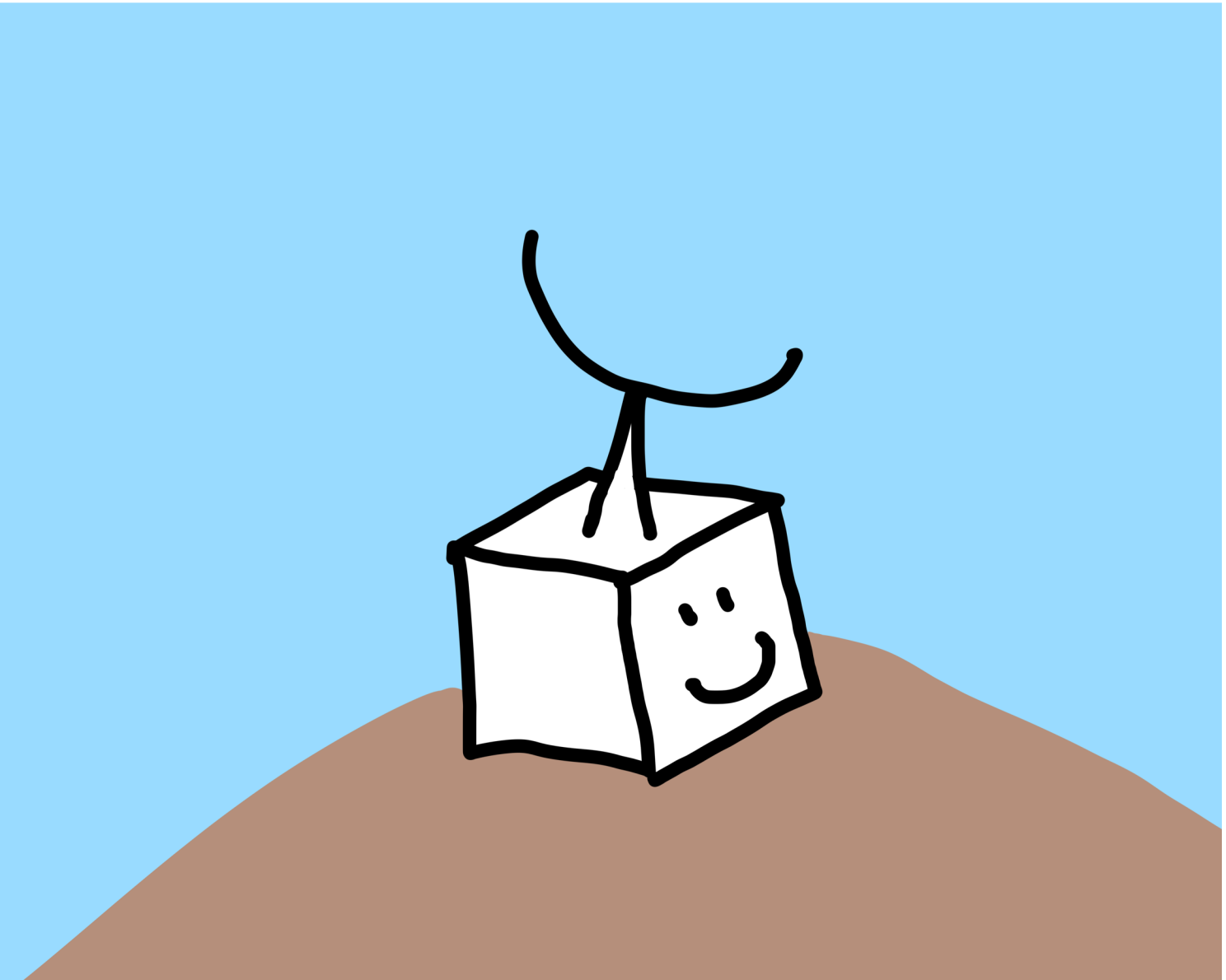
What do these radios talk to?

Who are we?



Open Research Institute, Inc. (ORI) is a non-profit research and development organization which provides all of its work to the general public under the principles of Open Source and Open Access to Research.

What do we do?

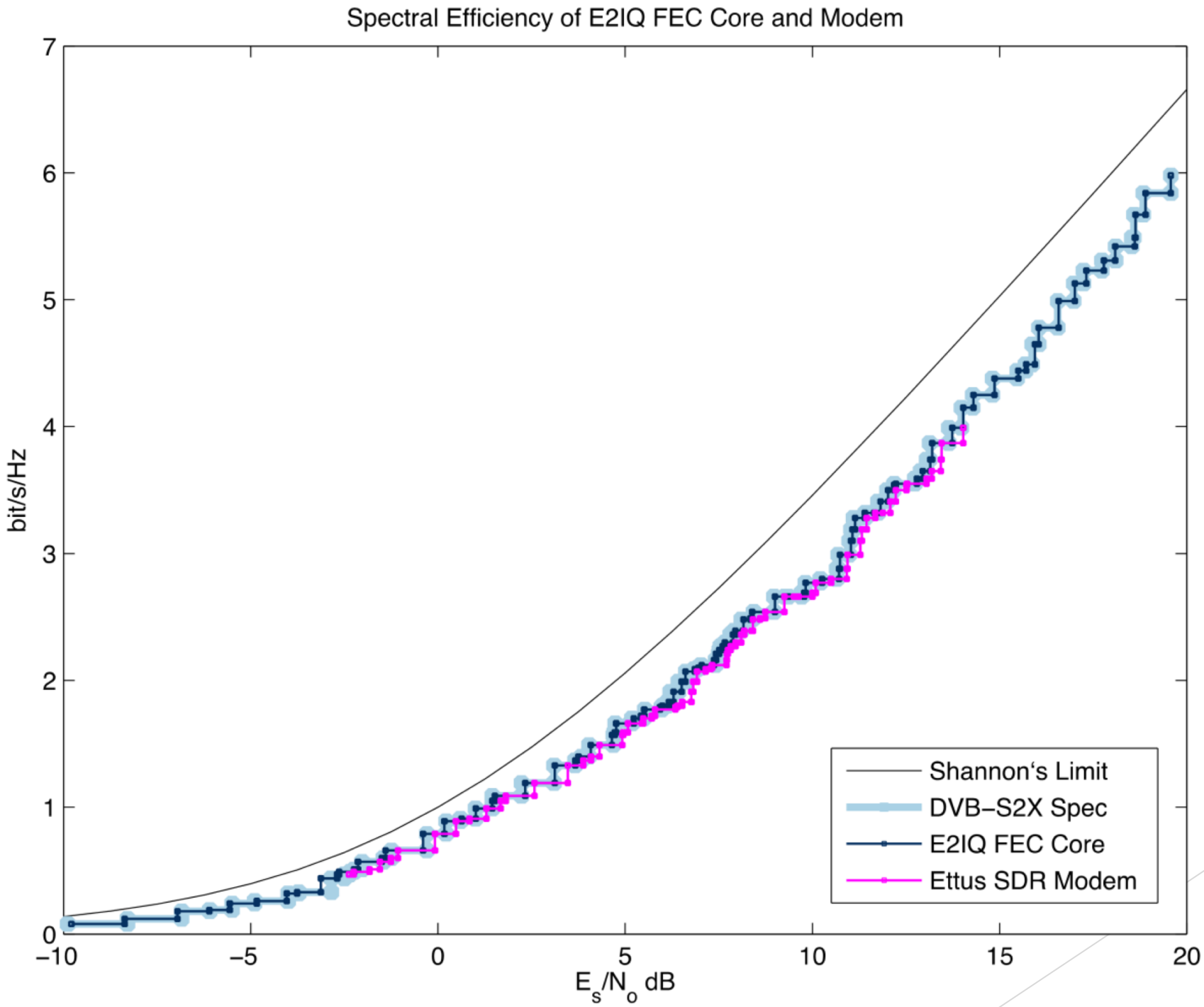


Why should you care?

Because a surprisingly large amount of software and hardware in amateur radio is closed, proprietary, or licensed in ways that make it very difficult to improve, learn from, or adapt.

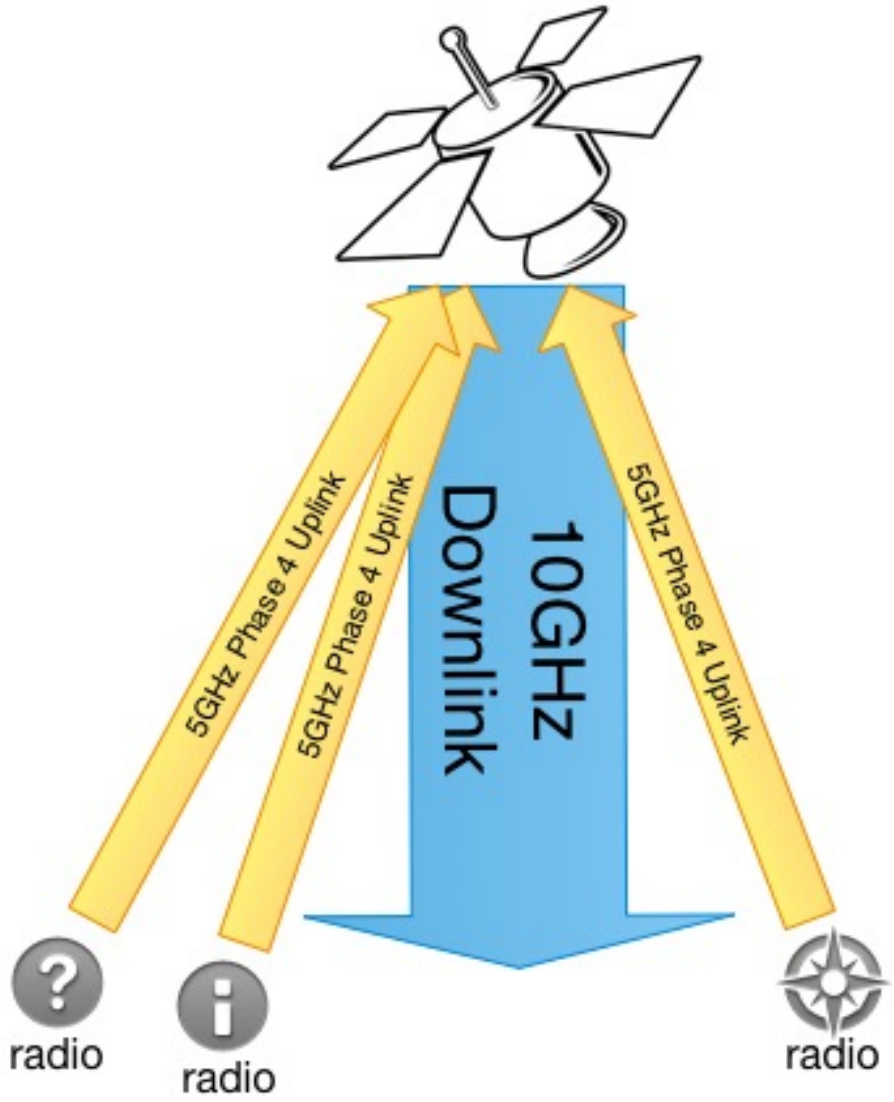
What are we doing about it?

Liberating DVB-S2 and DVB-S2X for amateur radio use!


Spectral Efficiency of E2IQ FEC Core and Modem
bit/s/Hz
E_s/N_o dB
0
1
2
3
4
5
6
7
−10
−5
0
5
10
15
20
Shannon's Limit
DVB−S2X Spec
E2IQ FEC Core
Ettus SDR Modem

Phase 4 radios

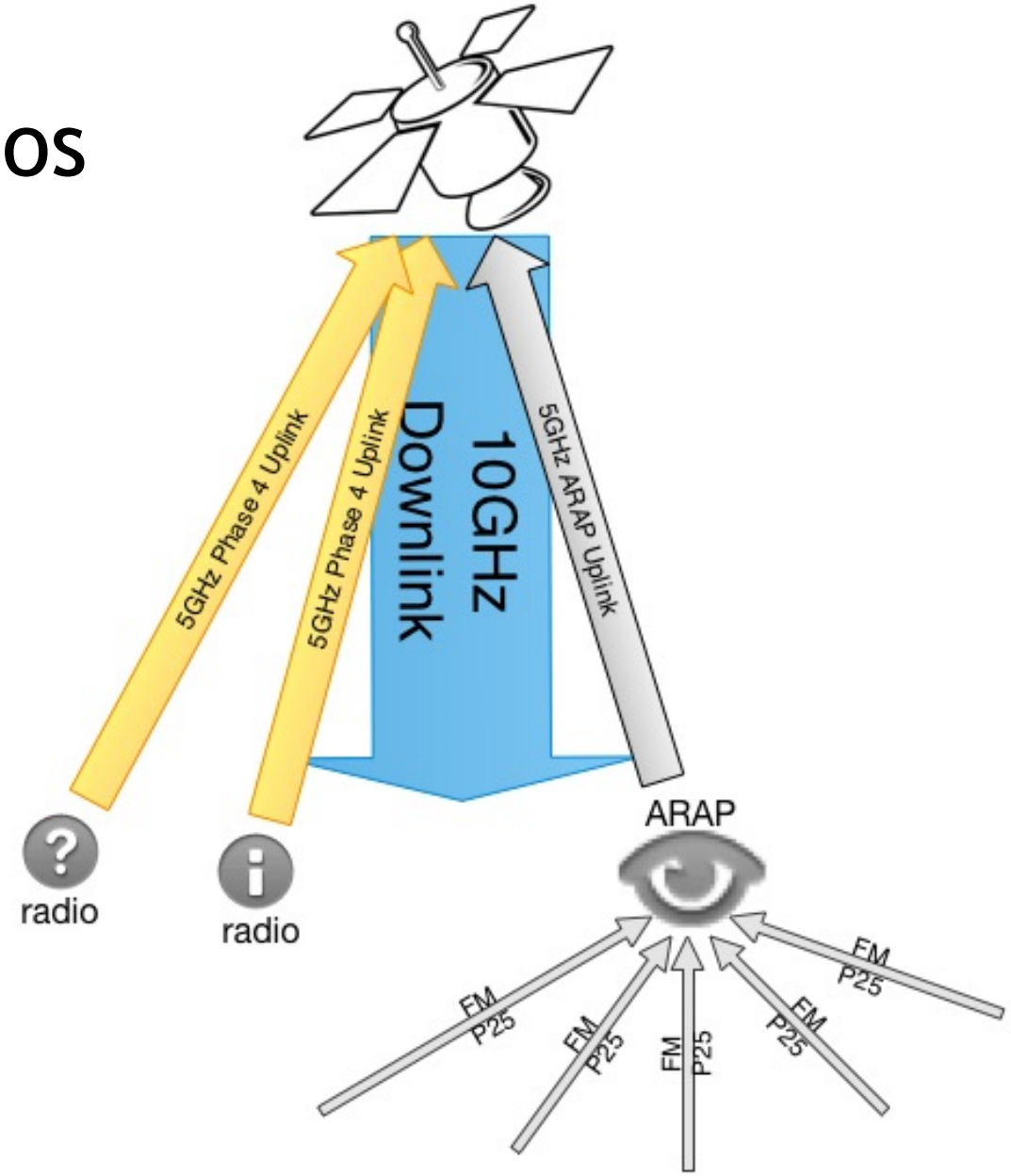
5.645-5.655 GHz up
10.45-10.46 GHz down



What does it look like?

Phase 4 radios

5.645-5.655 GHz up
10.45-10.46 GHz down



What does it look like?

What is the team doing?

- RTP multicast innovations
- DVB correlators
- Open Source LDPC
- Dual Band Feed
- Filters! 5GHz amps!
- ARAP demonstrations
- Having tons of fun
- Buying every SDR dev board

What do we need?

You!
Volunteers, cheerleaders, documentarians,
artists, designers, hardware hackers,
software, hardware, firmware,
Protocol design, testing, RF design,
And on and on!

everyone is welcome

Plans for finished products

- Reference design in GNU Radio
- Trans-Ionsopheric hackable badges
- Trans-Ionspheric Radios
- 10GHz filters
- Dual Band Feeds
- Lots of other possibilities!

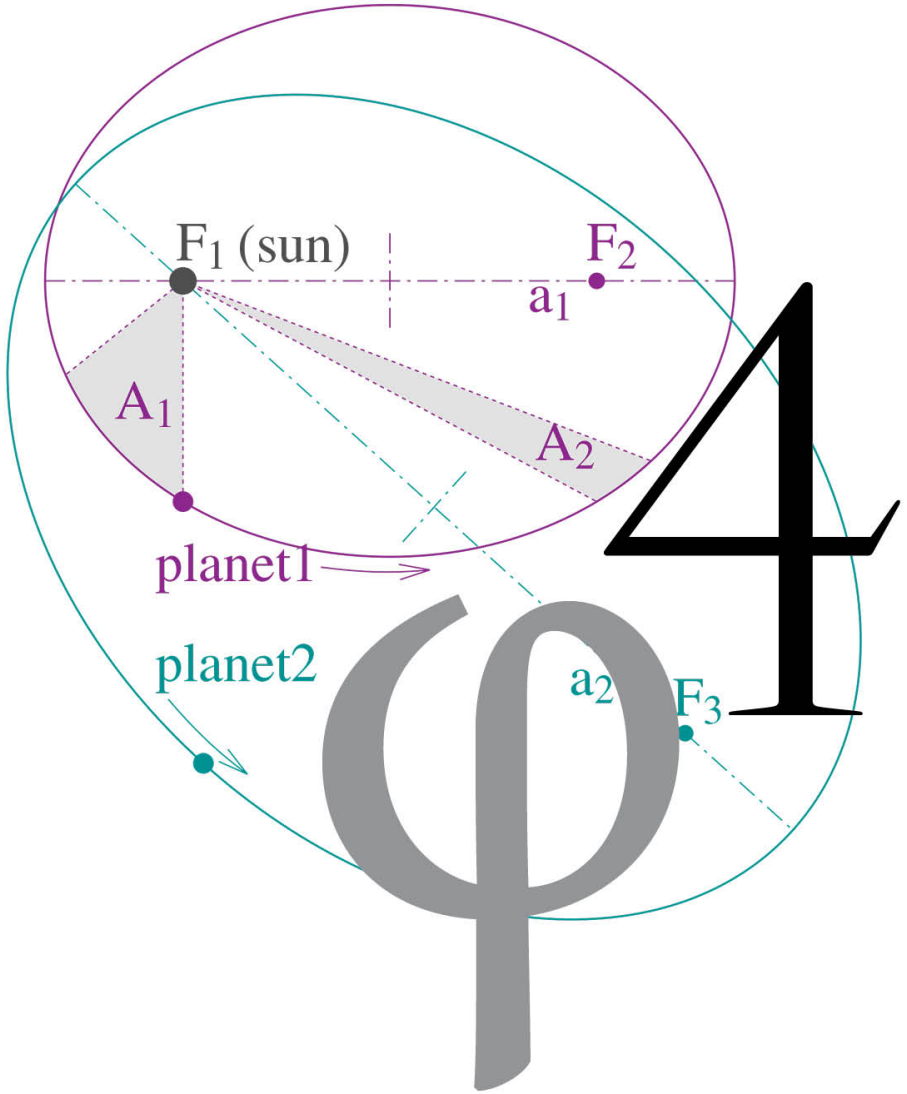
What do these radios talk to?

Completing a payload
Getting a launch
Dealing with ITAR/EAR
Paying for a launch

A Groundsat

Each other!


MILLENNIUM
SPACE SYSTEMS



4

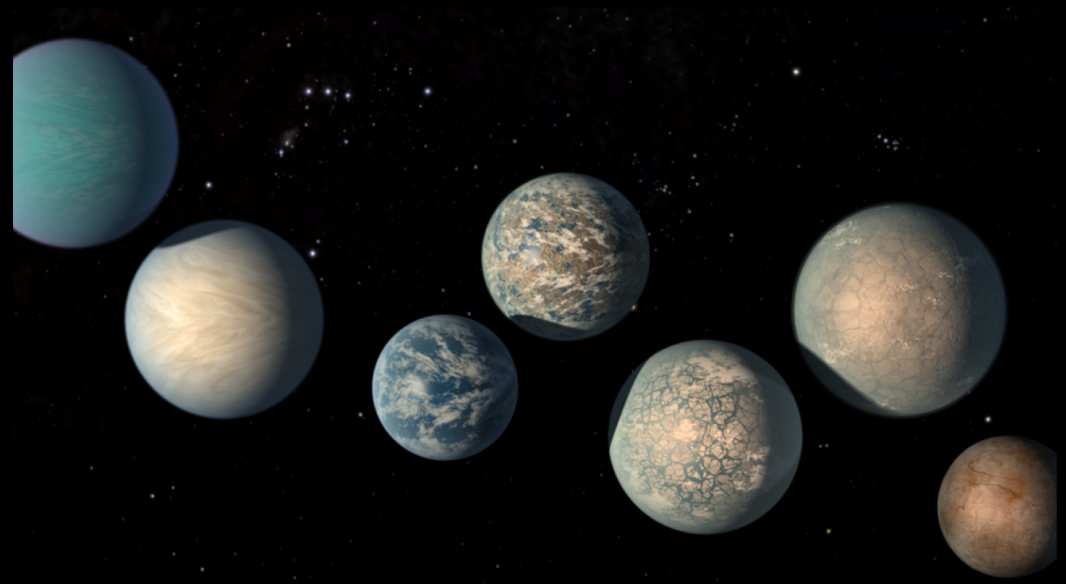
multiday hackfest and workshop
multiday hackfest and workshop
multiday hackfest and workshop
multiday hackfest and workshop
multiday hackfest and workshop
multiday hackfest and workshop

DVB-S2/X Block Party GRCon2018

Build and Test
DVB-S2 and DVB-S2X
Receivers in GNU Radio
ready to start now?

contact: @abraxas3d
w5nyv@yahoo.com

DEFCON



Phase 4 Ground GitHub: https://github.com/phase4ground
Phase 4 Space GitHub: https://github.com/phase4space
Mailing List: https://lists.openresearch.institute/

Open Research Institute homepage: https://openresearch.institute/
GNU Radio Homepage: https://gnuradio.org/
Libre Space UPSat: https://libre.space/projects/upsat/

Digital Video Broadcasting organization: https://www.dvb.org/