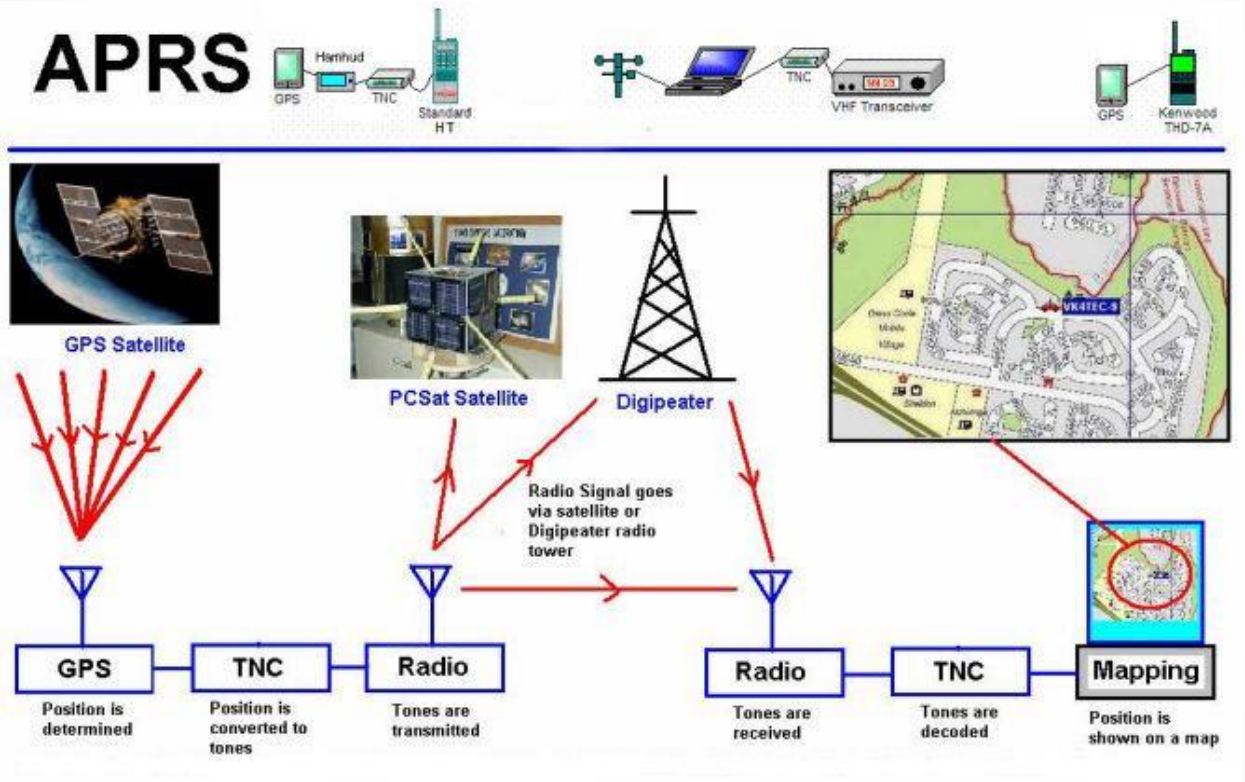
APRS Station Tracking and Messaging



Prepared for Orange County RACES

Presented by Mark Warrick

Who Has Used APRS?

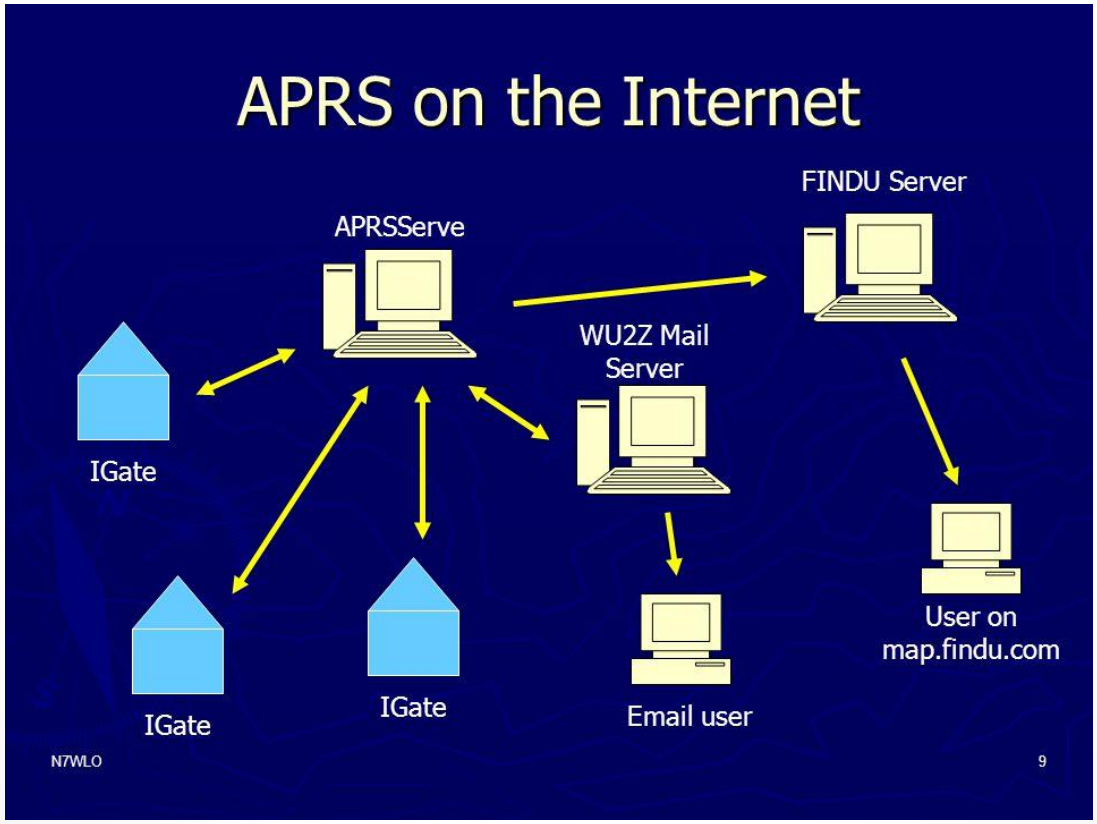
What Is APRS?

- APRS: Automatic Packet Reporting System
- Developed by Robert Bruninga (WB4APR) in 1982
- First used on a Commodore Vic-20 in 1984 for tracking horses in a 100-mile endurance run.
- Used world-wide on VHF frequencies (144.390 in US).
- Basic info: GPS location / preset status messages

Who Has Used APRS-IS?

What is APRS-IS?

- It connects APRS digipeaters via Igates to Internet

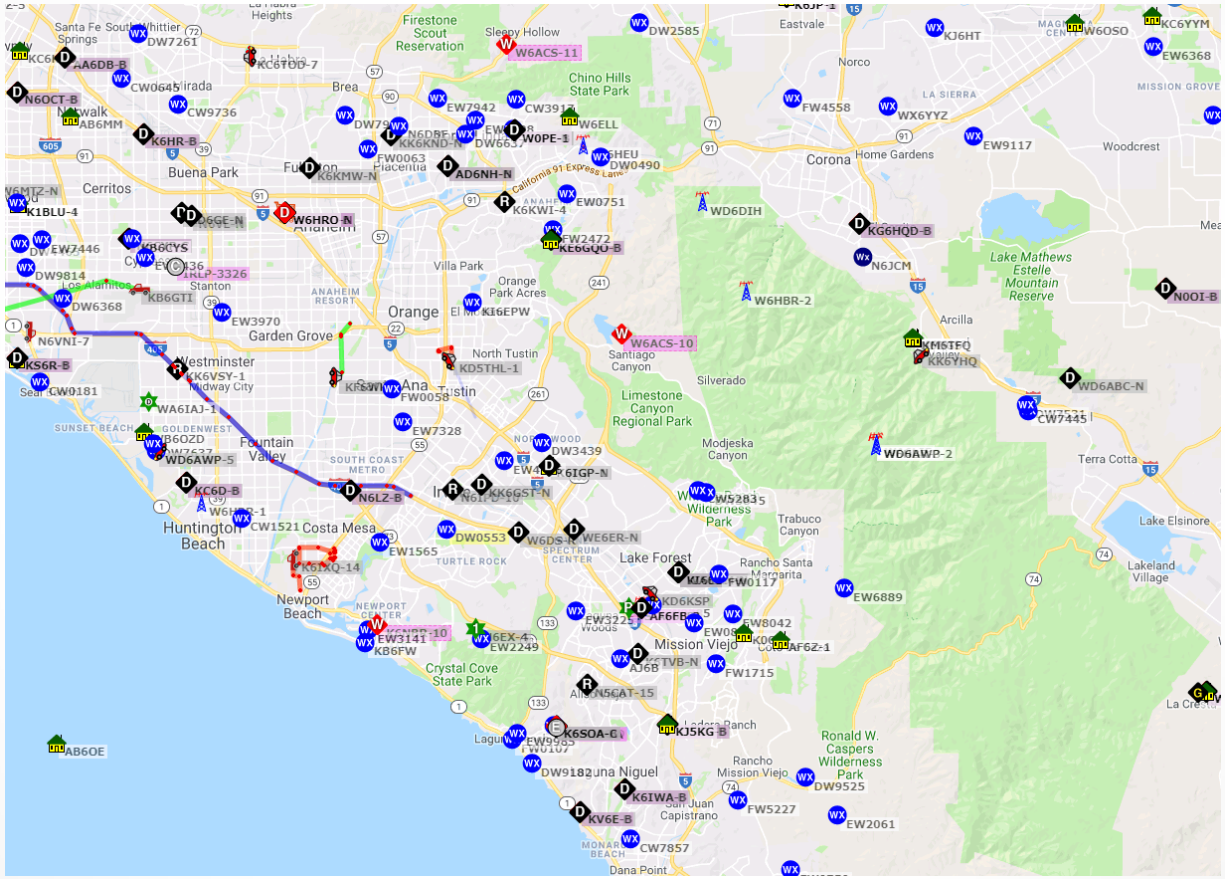


APRS (RF) vs. APRS-IS (Internet)

- APRS (RF) Does not require Internet service.
- APRS (VHF) works anywhere in range of APRS stations and / or digipeaters.
- Fill-in digirepeaters can be added anywhere to extend ARPS range.
- Some radios have built-in digipeaters!
- Will work during a major power outage.

- ARPS-IS: Internet required!
- APRS-IS capable software runs on Android and iOS, Linux, Mac and Windows.
- APRS-IS connects digipeaters to Igates.
- Field Use: Works only where cell data signals are good.
- Might not work in major power outage.

Orange County Stations



Equipment for Sending APRS Beacons

- Self-contained (PicoAPRS, Byonics TinyTrack4)
- VHF Radio with APRS (Kenwood TH-D72A)
- Laptop / tablet / phone Audio AFSK (Direwolf)
- Laptop / tablet / phone using APRS-IS
- Laptop / tablet / phone using TNC (Modem)

Other APRS Connections

- HF on 10.151 Mhz LSB
- Satellite: ASTARS (PCSat, ISS, ARISS, etc.)
- Outside the scope of this presentation

Receiving APRS via PicoAPRS

- Extremely small screen, but packed with info.
- A bit expensive (about $215 USD)

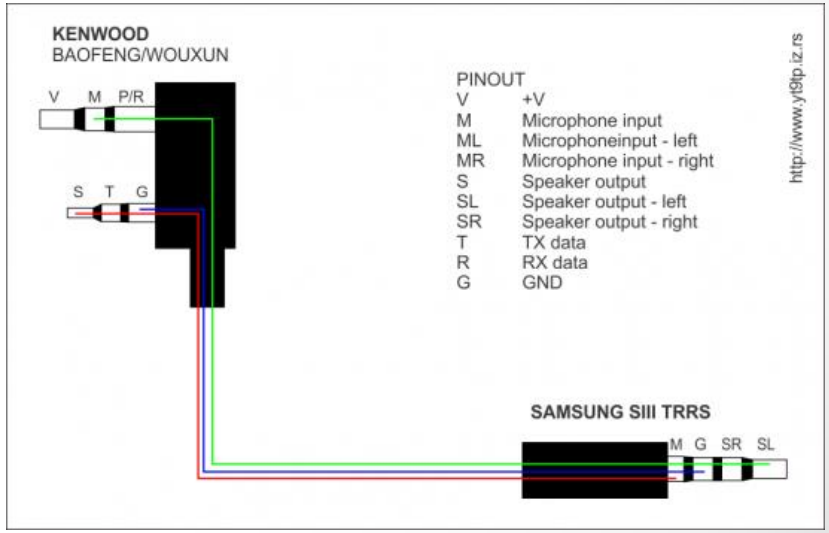
Some screenshots from PicoAPRS:

Receiving APRS via Radio

- Limited screen space
- Limited range (due to antenna)
- Complicated filtering (very difficult in the field)
- Replying is like text messaging with a 25 year old phone

Receiving APRS via Audio (AFSK) & App

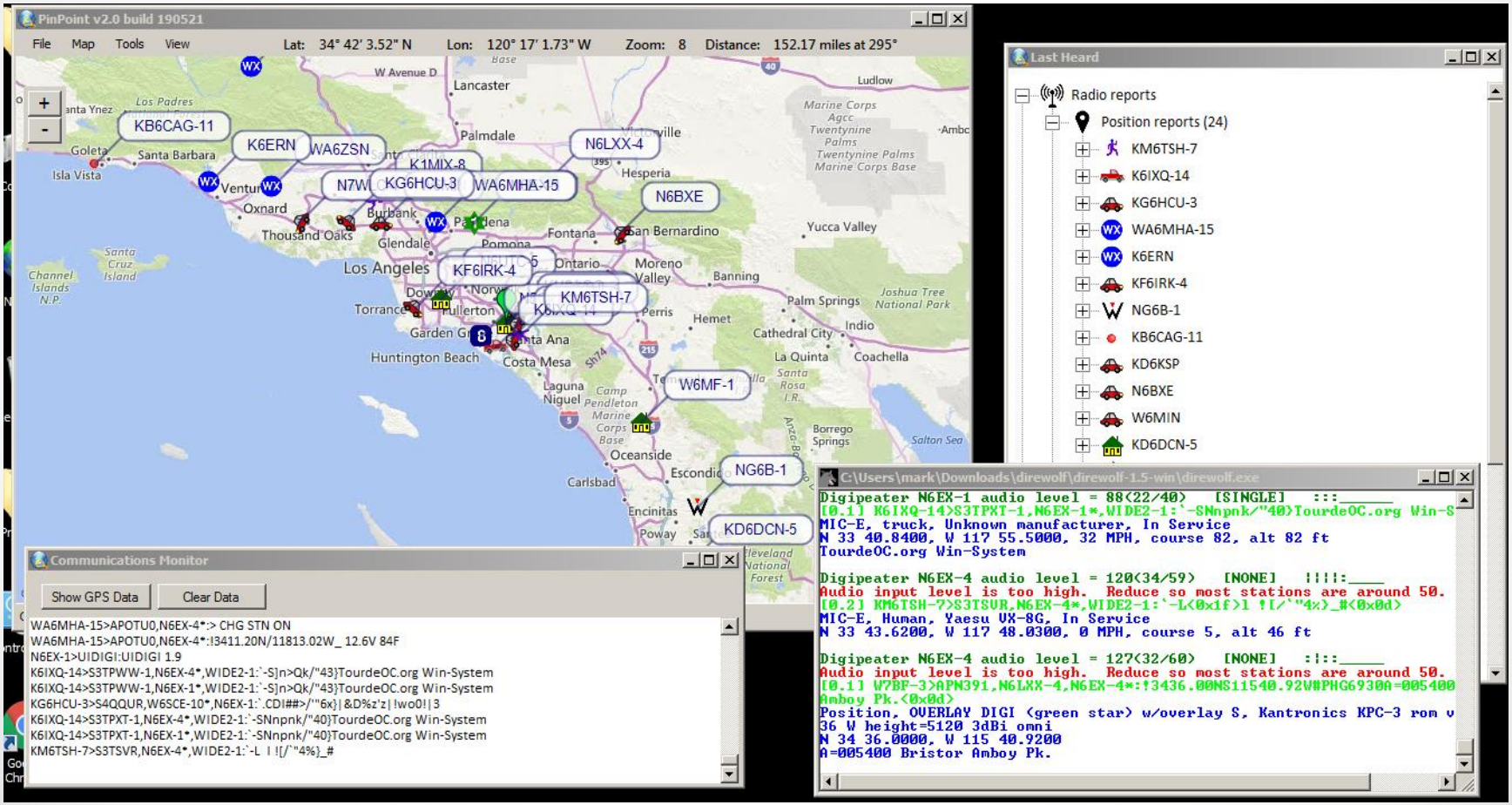
- Connect laptop, tablet or phone via audio
- Software-based TNC Demodulates Audio to Text
- Cheap solution – Baofeng, Audio Cable, App
- Messaging that you're used to using!



Receiving APRS via Direwolf

- Use ANY radio and corresponding audio cable.
- Use a USB dongle to protect laptop and separate the channels between mic / speaker.
- Software controls PTT.
- Acts as a virtual network TNC that can be used by multiple computers.
- Useful info window helps tune radio dial.
- Hard to configure, but reliable once setup.
- Works with Baofengs! CHEAP!

Direwolf Receiving via Baofeng

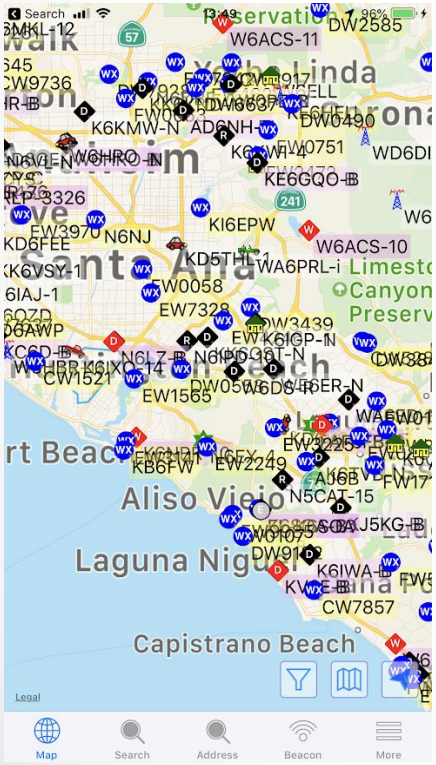


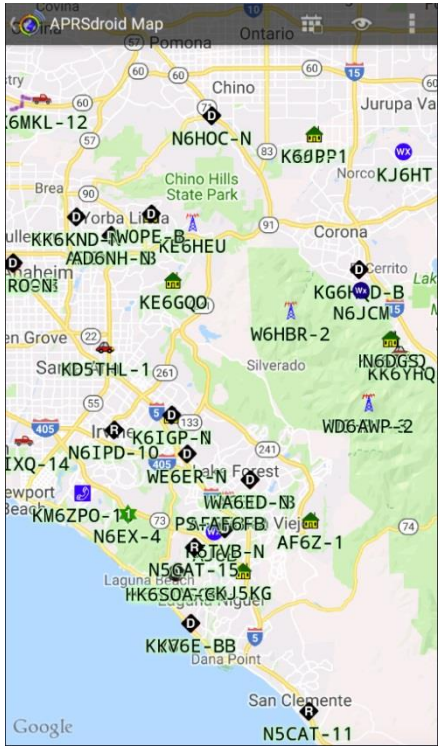
Receiving APRS-IS via Cell Phone

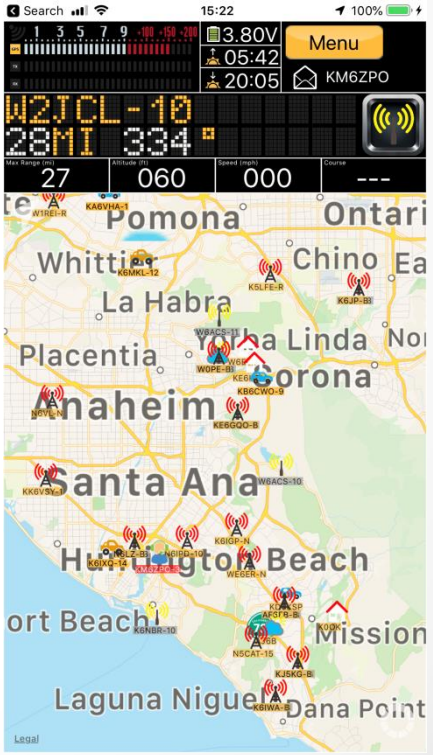
[APRS.fi](#)
iOS

[APRSDroid](#)
Android

[APRS Pro Ultimate](#)
iOS

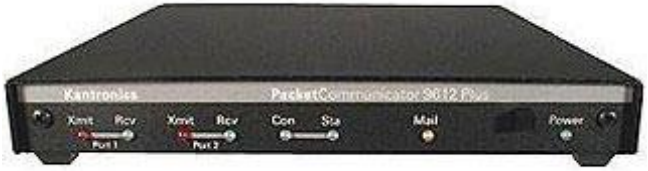




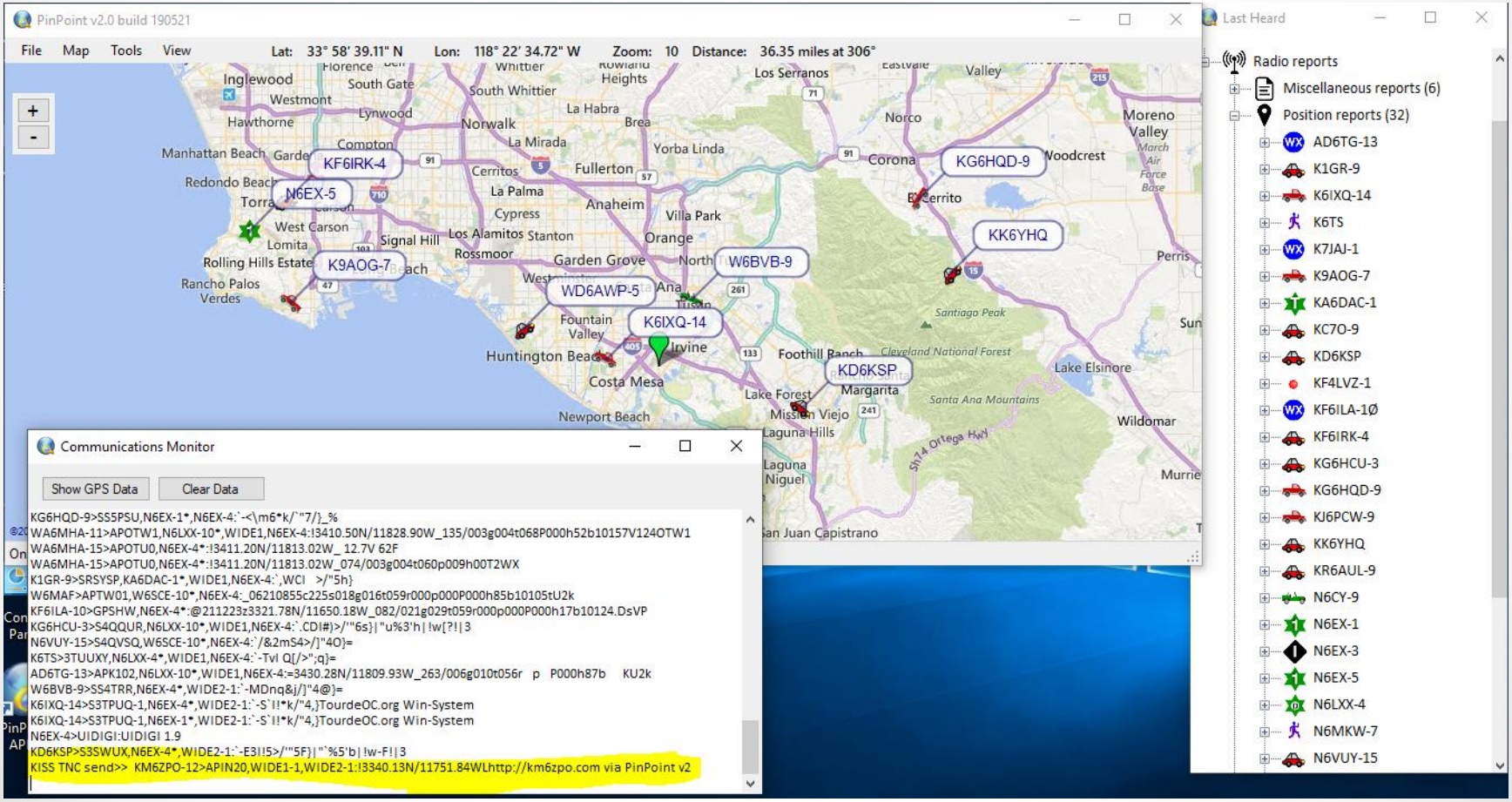


Receiving APRS via Hardware TNC

- Radio with built-in TNC (Kenwood TH-D72A)
- Ext. TNC (Mobilinkd, Kantronics, SignaLink)
- Hardware-based TNC, requires software
- Signals sent / received via VHF 144.390
- Not dependent upon Internet (APRS-IS)
- Power only required for devices



PinPoint APRS



PinPoint APRS Benefits

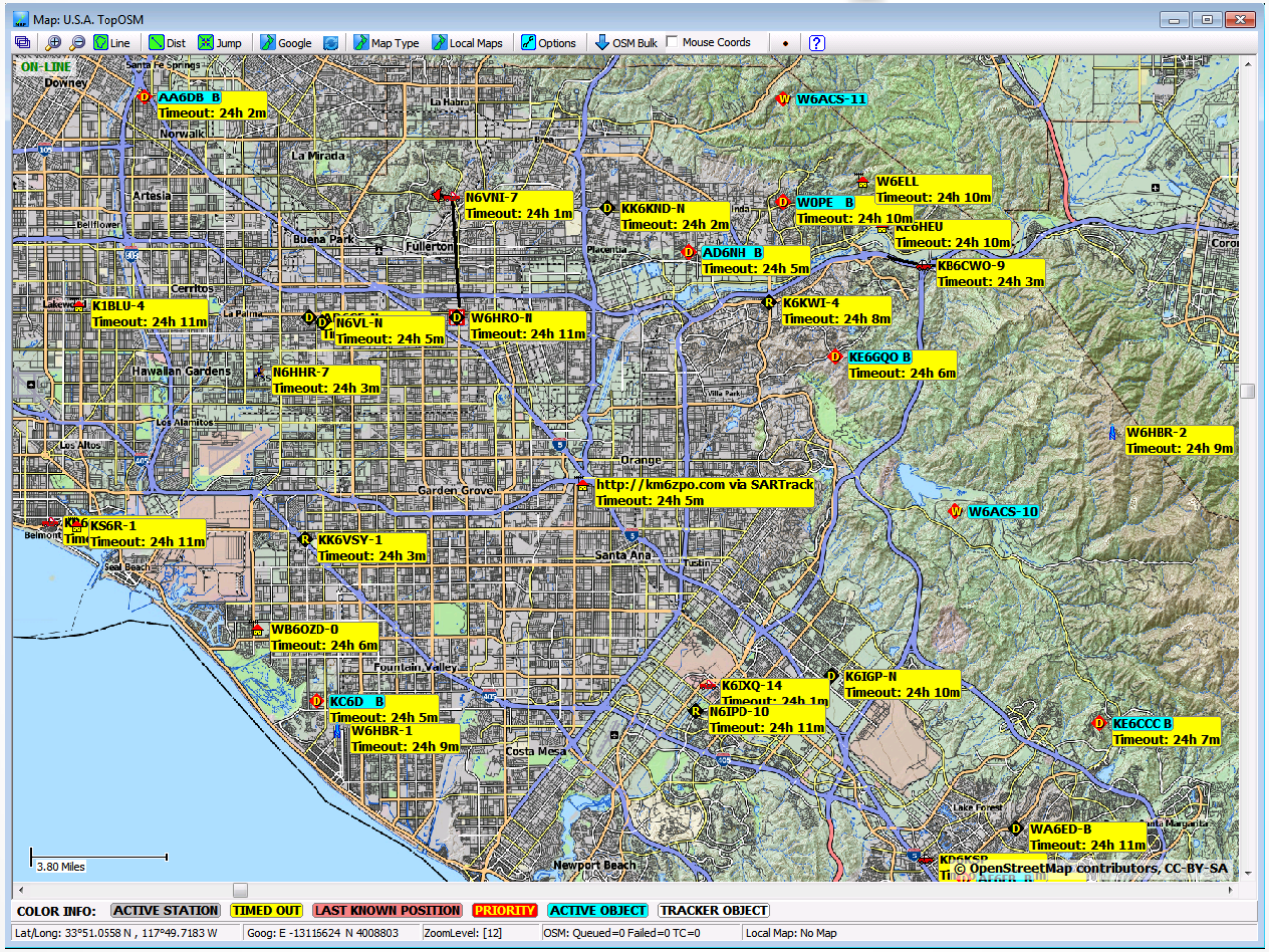
- No internet required!
- Works with external GPS receiver
- Greatly enhanced with internet (APRS-IS)
- Very simple interface
- Maps can be cached
- Simple chat-like messaging
- Minimal laptop specs needed

PinPoint APRS Deficiencies

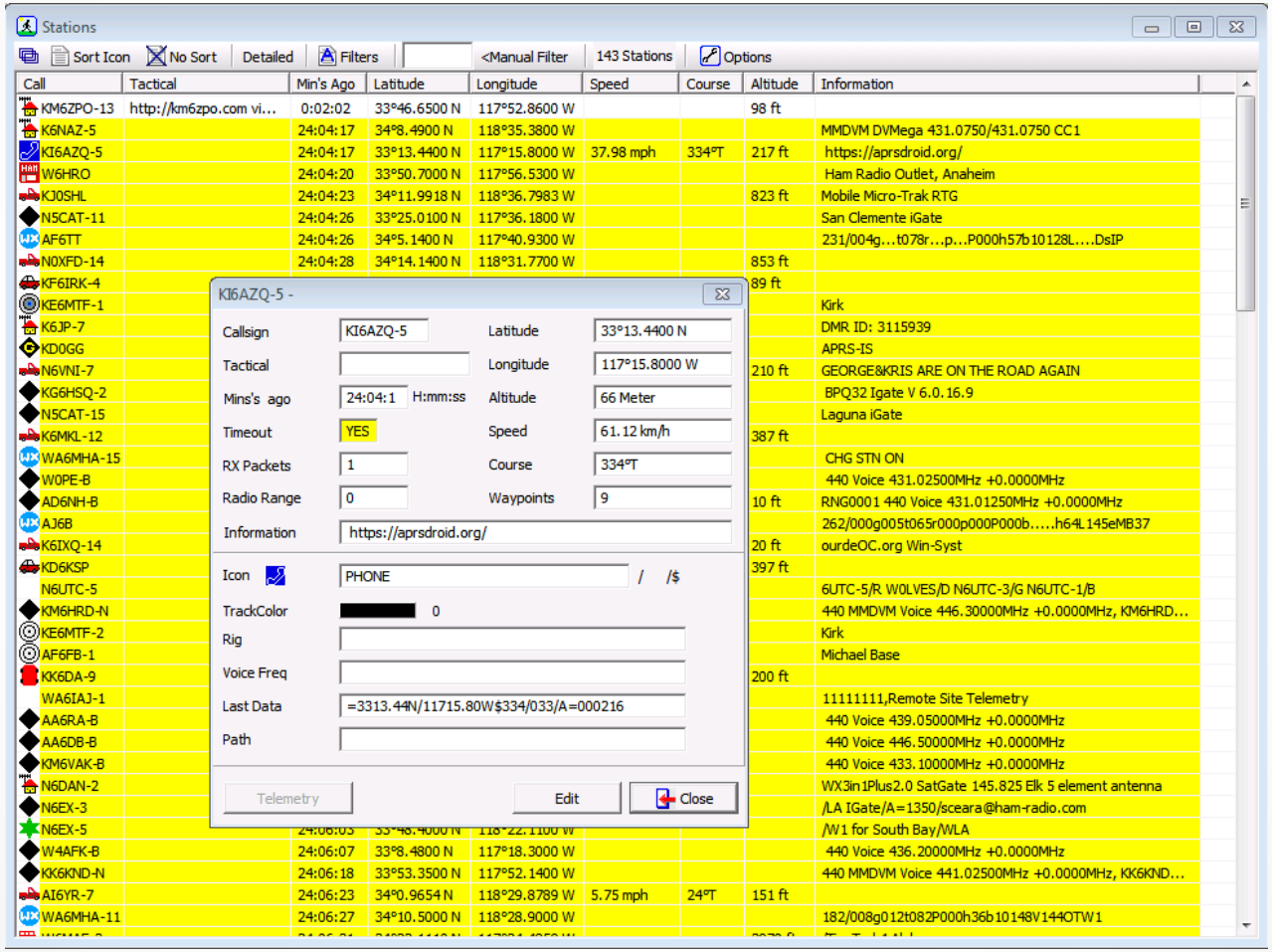
- Station info is lost after closing last heard window
- No group messaging feature
- Cannot mass cache maps for offline use
- BETA product with limited resources
- No documentation

SARTrack – Designed for Professionals

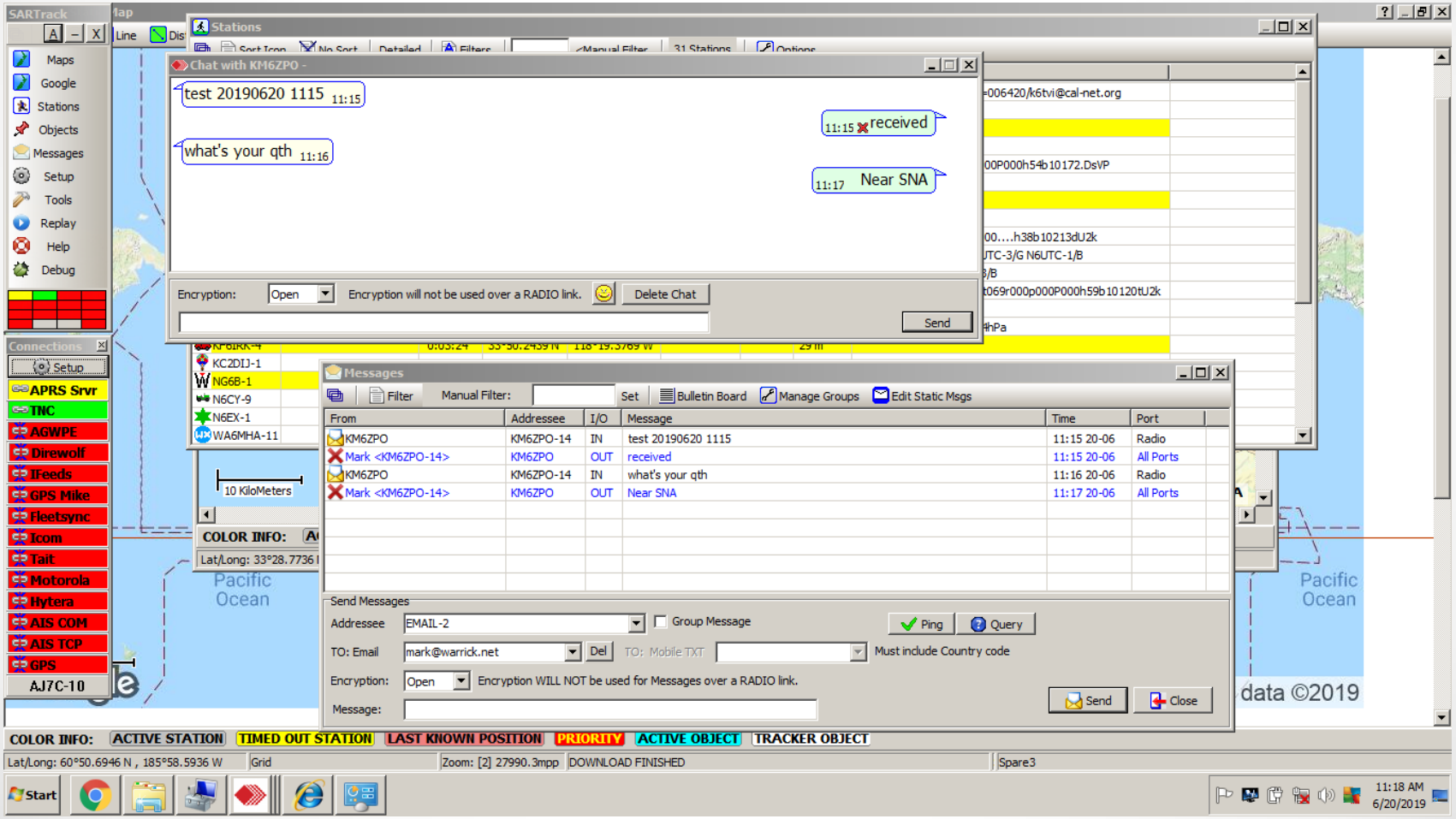
SARTrack Map View



SARTrack Stations View



SARTrack Messaging View



SARTrack Benefits

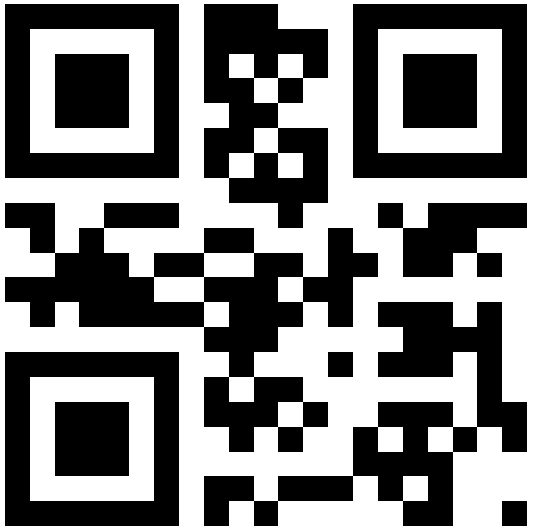
- Manage information for the entire operation
- Extremely detailed information
- Group station tracking and messaging
- APRS send / receive SMS
- Database server for multiple SAR stations
- Multi-mode connections (TNC, APRS-IS, AGWPE, Direwolf, Icom, Motorola, Hytera – and Satellite!)
- Works with external GPS receiver
- Extensive documentation

SARTrack Deficiencies

- Steep learning curve – especially in SAR mode
- Memory and video card intensive
- Not easy to cache maps
- Map quality not as good as PinPoint APRS
- Cheap TNCs (like Mobilinkd) not supported

Software Demo

Questions?

Thank you!

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