

Namaste User Experience Discussion 21 February 2008

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Edited Discussion

We're brainstorming about user experience requirements for the ACP groundstation. We're starting from a basic notion that there might be multiple types of ground station, including ones with rich user interface facilities (i.e., a computer GUI) and ones with almost no user interface facilities (like a mobile FM rig). We'd like to take optimal advantage of both and offer a combined user experience that's designed around the user.

Start with the bare-bones mobile rig style user interface. What must it have?

It has an S meter. That is, some kind of visual indication of signal strength. This could be a simple RSSI (received signal strength indicator) and/or something that tries to display the uplink signal quality of the station being received. The former would be useful for monitoring and adjusting the local station equipment. The latter would be helpful in providing signal reports to the other station, but would probably require a lot of help from the payload. When the link degrades, it's important to be able to tell the difference between local problems and problems with the remote station. Signal metrics are also very useful from an educational standpoint.

The S meter would be essential for station setup, so that the user of the bare-bones groundstation would be able to run a simple test, "kerchunking" the satellite, without need for help from another ground station.

A bare-bones FM rig also has a channel selector of some sort. This could be as simple as a rotary dial selecting from a short list of predetermined channels. More commonly, these days, it's a numerical frequency selector able to tune in any frequency in the band. In order to use these models unchanged, we'd need to have channels that were simply numbered. But this is far from ideal for the rich-interface ground station.

So, what the heck IS a channel, anyway? Don't confuse it with one of the 500 uplink frequencies. Each talker has an uplink frequency, and a channel (if it's being used for a conversation) has more than one talker. There are also an arbitrary number of listeners, who may not even have an uplink frequency at the moment. Indeed they may not even have a transmitter at all.

A channel is a logical entity. Its fundamental property is that everybody listening on a channel will potentially hear a person who is talking on the channel, and won't hear anybody talking on

other channels (leaving aside for a moment the question of multiple channel monitoring). This raises a number of interesting points.

1. Does the satellite have any awareness of channels? I hope the answer is "no", but let's see if it works out that way when we have all the details in place.

2. What happens when more than one person is talking? Pick the first to transmit, or pick the last to transmit, or pick one arbitrarily, or listen to everybody and mix the audio. The latter is best but puts the most demands on the receiver. For emergency communications work, you might want to always give the net control (or the higher ranking officer, or some other subgroup) priority over talking on the channel.

3. How is a channel identified? A simple channel number would be easy for the bare-bones station and very familiar to everybody, but not very user-friendly. A text tag would be nicer; think of a "room" on a IRC server. Room tags can come and go with the users; there's no need for a fixed set of them, so no central administration is required. However, the text tag would not be accessible to the bare-bones mobile rig user. This could be worked around by also assigning a channel number. Or, much cooler, the channel could also be assigned a short VOICE tag. The mobile rig would play back the voice tags as the operator "tuned" through the available channels. There might be a "create channel" button on the mobile rig that would enable even the bare-bones user to set up a channel with a voice tag.

4. Can the whole channel structure be implemented on a peer-to-peer basis among the ground stations. Again, I hope so.

The ACP has some inherent advantages in having a single shared downlink channel that everybody can hear. While (in the baseline) not every user can copy every data frame on the downlink, there ARE certain control frames that everybody is assumed to be able to receive. For example, the one that provides information about which uplink channels are in use. Much use can be made of this type of control information. HOWEVER, it's important to remember that someday there may be multiple satellites with ACPs on board. Nothing we design should make it more difficult to create a multi-satellite ground station with a coherent user experience.

Consider a possible unifying principle for voice operations: every transmission is made to a room (logical channel) and not to another specific user. A one-to-one conversation is just a room with exactly two participants. A CQ is a room with one participant and a flag set that invites others to join the room. A round table discussion is just a room with several participants. This is just the IRC model. Anybody can create a room. Rooms cease to exist when the last person leaves (or not, but that would require a central server, which we'd like to avoid).

Many internet-based voice applications provide a parallel text chat channel, and this is a useful

feature. Should we do the same? Probably so. This may or may not be the same short-messaging feature as envisioned as a separate service.

Raw Brainstorming Session Notes

Signal strength monitor uplink/downlink.
RST? Make LEDs light up.

Coding Success, FER. displayed.
metrics, from an educational POV are good.

* self test Rx side *

Q: what's a channel? Fixed resource => more flexible definition that includes rooms, named vs. numbered (frequency)

* Voice tags for channels

* create a named room on your mobile rig.

Anyone scanning through would hear the voice tag. "Create room" button.

Peer-to-peer preferred.

Shared common channel needs to be leveraged as much as possible.

We don't have to deal with some of the issues that the internet has to deal with.

If the protocol knows about CQs, then it needs to know how to transition from CQ mode to conversation. FSM? If CQ is a room/invite, then turning off the invite and starting talking are disparate?

Never recognize the state of talking to another person. You're talking to a channel, not necessarily a person. Think IRC.

Don't assume that there is only 1 satellite. Don't be dumb.

Ask certain people about what irritates them about their chosen mode.
e.g., KY6LA for D-Star, NN3V for Echolink

Should we include IM? i.e. Echolink