Emergency Communications meeting at HamRadio 2019
Why do we use some bands/modes?

The RAYNET-UK survey presented last year showed how we stay with 144MHz/430MHz bands but why?

- Easy to obtain equipment
- Predictable performance – no problems with propagation
- Can be flexible to use for voice or data
- It’s easy!
## Integration

<table>
<thead>
<tr>
<th>Pen and Paper</th>
<th>SMTP/ Email-like Client</th>
<th>Human interface</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airmail</strong></td>
<td>Fldigi</td>
<td>CAT5</td>
</tr>
<tr>
<td></td>
<td>Fldmsg/Flarq</td>
<td>BPQ Node</td>
</tr>
<tr>
<td><strong>CW/Voice</strong></td>
<td>PACTOR</td>
<td>D-RATS</td>
</tr>
<tr>
<td></td>
<td>PSK Modes</td>
<td>IEEE 802.n</td>
</tr>
<tr>
<td></td>
<td>TNC</td>
<td>AX25</td>
</tr>
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<td></td>
<td>Soundcard</td>
<td>DStar</td>
</tr>
<tr>
<td>HF</td>
<td>VHF/UHF</td>
<td>Dedicated Radio</td>
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<td>Microwave</td>
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Balance?
What is new?

- **Es’hail2 ( QO-100 )**
  - Guaranteed coverage of most of our region
  - Some mode limitations

- **New Packet Radio**
  - Bringing higher speed data to 430MHz
  - Increased range

- **JS8Call**
  - Simple text messaging
  - Able to cope with very poor HF conditions ( -20dB S/N )
Es’hail2 Coverage
Es’hail2 usage
Es’hail2 limitations

- No continuous carrier modes like FM
- Must be able to hear your own signal
- Power output must be managed to be no louder than the beacon
- Fixed locations, not ‘mobile’
New Packet Radio

- Developed by Guillaume F4FDK
- Brings higher speed data to UHF band
- Longer ranges possible
- Not the first time this has been tried....
NPR – What is it? (1/4)

- Bi directional IP over radio link
  (no AX.25 despite the name “packet radio”)
- Intermediate data rate between Packet and HSMM-WiFi
- Frequency band 420-450MHz much easier to use than 2.4GHz or 5.6GHz (HSMM-WiFi-Hamnet).
- Designed by a HAM for HAMs
- 100% Open-Source : PCB + firmware

<table>
<thead>
<tr>
<th></th>
<th>Datarate</th>
<th>Frequencies</th>
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</thead>
<tbody>
<tr>
<td>Packet radio</td>
<td>Raw : &lt;9600bps</td>
<td>ALL (mainly 144MHz and 430MHz)</td>
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<tr>
<td></td>
<td>Useful : several kbps</td>
<td></td>
</tr>
<tr>
<td>NPR</td>
<td>Raw : 110kbps to 1Mbps</td>
<td>420-450MHz</td>
</tr>
<tr>
<td>New Packet Radio</td>
<td>Useful : 70 to 500kbps</td>
<td></td>
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<tr>
<td>HSMM - Hamnet– WiFi</td>
<td>Raw : &gt;10Mbps</td>
<td>2.4GHz, 5.6GHz</td>
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<td></td>
<td>Useful : &gt;10Mbps ?</td>
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</tbody>
</table>
NPR – What is it? (2/4)

Optimised for “Point To Multipoint” configurations

- 1 central repeater, called MASTER
- Several CLIENTS

The Master only transmits when solicited by at least one Client.

**Use case example:**
Extension of Hamnet (2.4GHz or 5.6GHz) network

Possibility to use
“Point to Point” configuration

Use case example:
Low data-rate DATV (200kbps)
Bi directionnal, single frequency.
JS8call

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M0IAK - IO90IV43
11:36:59
2019 Feb 22

Type your outgoing messages here.
JS8call

- Will store and forward messages
- Will work down to -20dB S/N
- Does not ‘yet’ make it easy to pass ‘formal’ messages
- Will run on simple computers like a Raspberry Pi
- A ‘mesh’ network for HF?
What do we do?

Do we stay with trusted systems?

Why do we pick the modes/frequencies we use?

Does everyone need to try a new technology?

Discuss....
Links

Es’hail-2
https://amsat-uk.org/satellites/geo/eshail-2/

New Packet Radio
https://hackaday.io/project/164092-npr-new-packet-radio

JS8Call
https://js8call.com
Today’s programme

1300-1330 Alberto IK1YLO - Film: 6 minutes about NEIFLEX (North East Italian Flood Exercise) European Exercise of 5/9 June 2018 followed by an update on their national DMR project.
1330-1340 Ron 4X1IG - 'Contest as a drill'
1340-1400 Oliver DL7TNY - Introduction to AREDN data networks
1400-1430 Open Forum. Any remaining questions and guidance for new groups.
1430-1530 Greg G0DUB - How would we respond to a power grid failure. A short exercise.
Thank you!

The International Amateur Radio Union

Since 1925, the Federation of National Amateur Radio Societies
Representing the Interests of Two-Way Amateur Radio Communication