The swiss army knife for HF digital communication?
Possible Disaster Response Setup

- Long Distance International Sites
- Medium Distance National Sites
- Other Local Sites
- On Site Operation Center
- LAN / WLAN
- HAMNET
- HF pskmail
DA5UWG/DF3FS Test Setup

- **LogPed**
- **Dipole**
- **p-to-p pactor link HF**
- **2,4 GHz On Site TCP/IP**
- **70 cm Packet Radio**
- **Modified WLAN Router running as digipeater**
- **5.7 GHz Dish**
- **HAMNET Service Link to next node DB0PDF**

**Local Area Network**

**other services**
PSKmail is a ARQ communication system optimized for HF frequencies, used when internet access is not within range.
PSKmail

- PSKmail is a ARQ communication system optimized for HF frequencies, used when internet access is not within range.
- It offers a flexible long-haul gateway to all usual internet based functions

Footprint = 6000 km
(Clipperton to Atlanta USA)
PSKmail

- PSKmail is a ARQ communication system optimized for HF frequencies, used when internet access is not within range.
- It offers a flexible long-haul gateway to all usual internet based functions.
- PSKmail uses a protocol developed by K9PS for use on HF, and adds modern DTN techniques for document transfer between servers and clients when the Internet is out.
Who is involved?

- PSKmail is a community effort.
- Developers:
  - Rein, PA0R
  - Per, SM0RWO
  - John, VK2ETA
  - Klaus, DL4OAH
- And numerous sysops and testers around the world...
PSKmail Philosophy

- Decentralized
- OPEN SOURCE
- Existing hardware only
- Most OS Platforms
- Standard protocols
- Energy efficient
- Non-intrusive
PSKmail Philosophy

- PSKmail uses a decentralized client/server gateway concept with servers offering all normal internet services, NO SINGLE POINT OF FAILURE!!.

There is no central server holding any info.

The smallest working system is 1 server + 1 client.
PSKmail Philosophy

• PSKmail uses a decentralized client/server concept with servers offering all normal internet services, NO SINGLE POINT OF FAILURE!!.

• OPEN SOURCE software only
  - Client: java
  - Server: Perl

Change the system yourself if it does not fit your needs...
PSKmail Philosophy

- PSKmail uses a decentralized client/server concept with servers offering all normal internet services, NO SINGLE POINT OF FAILURE!!.
- OPEN SOURCE software
- Uses existing hardware
Existing hardware
'PA0R/M special'
(80 meter NVIS)
PSKmail Philosophy

- PSKmail uses a **decentralized** client/server concept with servers offering all normal internet services, **NO SINGLE POINT OF FAILURE!!**.
- **OPEN SOURCE** software
- Uses existing hardware
- **Platforms available:**
  - Linux,
  - **ANDROID**,
  - OSx,
  - Windows (XP, W7)
Runs on modern hardware

VK2ETA has made the client software available for ANDROID smart phones

Try our bluetooth adapter...
Bluetooth adapter for FT-817

Diagram showing electrical connections and components for the Bluetooth adapter, including microphone and earpiece speaker connections.
Bluetooth adapters for FT-817
Ultra modern hardware

Hello Pskmailers,

This is the ultra portable version of Pskmail.

73, John

Sorry, does not work on iPhone.
PSKmail ARQ

Basic bandwidth = 500 Hz

Amtor

PSKmail

or:
PSKmail ARQ in trouble zone...

Basic bandwidth = 500 Hz

Amtor

PSKmail

or:
PSKmail ARQ

Basic bandwidth = 500 Hz

- Amtor
- PSKmail

or:

- PSK500 - PSK250
- PSK500R – PSK125R
- MFSK 32 – MFSK 16
- THOR 22 – THOR 8
- Contestia 500/8

Several new digital modes were developed especially for pskmail, like PSKxxR and THOR
PSKmail ARQ

Basic bandwidth = 500 Hz

- Amtor
- PSKmail
  - or:
  - PSK500 - PSK250
  - PSK500R – PSK125R
  - MFSK 32 – MFSK 16
  - THOR 22 – THOR 8
  - Contestia 500/8

Automatic adaptive mode switching, separate for up- and download channels following channel quality.
PSKmail frames

Frame 1

Frame 2

Frame 3

PSKmail  Pipelining for efficient channel use
PSKmail speeds incl. compression

- Max. measured speed using 500 Hz bandwidth: 2900 chars/min using PSK500 mode on a clear channel (demo video @ youtube)

- Max. Theoretical speed for 2 kHz bandwidth: 6000 chars/min e.g. using 5 x PSK250R mode

- We use only 500 Hz bandwidth at the moment for ´good citizenship´ on ham bands
Flexible mode table to fit channel conditions
PSKmail servers
Internet access gateways

- PSKmail offers a **gateway** to the use of most modern communication functions like:
  - **Email** to any email address on the internet or to your private LAN or VPN
  - **File** upload/download
PSKmail email client
File upload
File download
PSKmail downloads your wx maps
PSKmail offers a **gateway** to the use of most modern communication concepts like:

- **Email** to any email address on the internet or to your private LAN or VPN
- **File** upload/download
- **APRS** service for managing your resources
- **Twitter, Messaging, Bulletins**
- **Web access** (Text only)
- **Telnet** service from client ↔ internet
- Webmail service for internet ↔ local mail
APRS integrated...

Client connects to Xastir or UI-View maps and downloads your APRS locations from the Server based on your GPS location...

This allows you to manage your resources efficiently...
In several countries disaster response organisations are starting to use social media to disseminate information.
Twitter integrated
Twitter integrated
Twitter integrated
Delay Tolerant Networking built in...

- Auto resume of document transfer next time a client connects after a broken link
- Automatic document forwarding between servers via HF if necessary
- Automatic Local mail forwarding between servers via HF if required
Roll your own functions...

- Ideas from experience with hurricane Sandy:
  - **Message forwarding** between servers
  - Add **Web server** and **Wifi access point** to the client to enable users in Red Cross hubs with a working smart phone to:
    - Write their own mails
    - Send their own tweets
    - Read twitter messages with certain hashtags

  ... of course only during emergencies...
Example: www to pskmail server
Rapid deployment:
Puppy linux live CD´s

● Preconfigured live CD´s to run in your xyl´s laptop
  – Puppy server
  – Puppy client
● Works in any Windows PC...
Does it work?

• A German sailor gets his email via KB2PNM from his anchor place at Clipperton Island.
• PA0R uses the link between PA0R/M @ Castellon de la Plana and SM0RW0 (1300 km) during the winter season on 10 MHz.
• DH5JF-8 uses pskmail APRS on a daily basis..
Plans for the future

- Port contestia modem from C++ to java to get rid of fldigi modem crashes
- Test wide band modes (2 kHz) for even more speed during real emergencies
- Use high speed modes on VHF/UHF
CONTACT + INFO:

- http://www.pskmail.org
- PSKmail mailing list on freelists.org
- PSKmail Facebook group

Email: PA0R@pskmail.org
PSKmail Philosophy

PSKmail offers a flexible **software toolkit** with all the functionality you need.

PSKmail is **OPEN SOURCE**, and it does not lock you into an external organization like Micro$oft. If you don´t like it you can change it and add your own functions.

PSKmail does NOT force you into a fixed communications concept, **YOU DECIDE**.
PSKmail @ GAREC 2013

The swiss army knife for HF digital communication

Rein Couperus, PA0R

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