TAPR
Dayton Hamvention
Digital Voice Project

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History

- Started with Charles Brain - G4GUO
  – Experiments on 40 meters
- AMBE - Advanced Multi-band Excited Coding
  – Reduces nominal bit rate from 64kbps to 3kbps
- Vocoder - hardware vs. software
  – Performance/complexity/licensing
  – DVS Inc.
- Modem
  – 2400bps voice + 1200bps FEC
  – Motorola DSP56002 evaluation platform

Charles' Vocoder & Transceiver

AMBE –

Modem –

Off-air -

Project Goals

- Put Digital Voice technology into Ham hands
  - Provide a total solution kit
    - Vocoder, modem, software, system enclosure
  - Use G4GUO design as a base
    - Update to current technology
- Provide an open, modular design
  - Leverage technology investments
  - Allow individual exploration

# *Digital Voice Architecture*

- Hardware based vocoder
  - Stay w/ DVS AMBE
- DSP based modem
  - History tells us we must create our own
- Modular system
  - DSP motherboard
  - Vocoder daughter card
- Open APIs for hardware and software
- System enclosure

Current Status

- Vocoder 1st generation
  - AMBE 1000
  - 20+ boards in beta
  - Provided a good start for modem development
- Vocoder 2nd generation – Dennis Silage K3DS
  - AMBE 2020
    - AD 73311 16 bit codec / Ubicom SX28 control cpu
  - Modular/Open API
    - Being defined
  - In prototype stage

Vocoder 2
K3DS and the K3TU Team
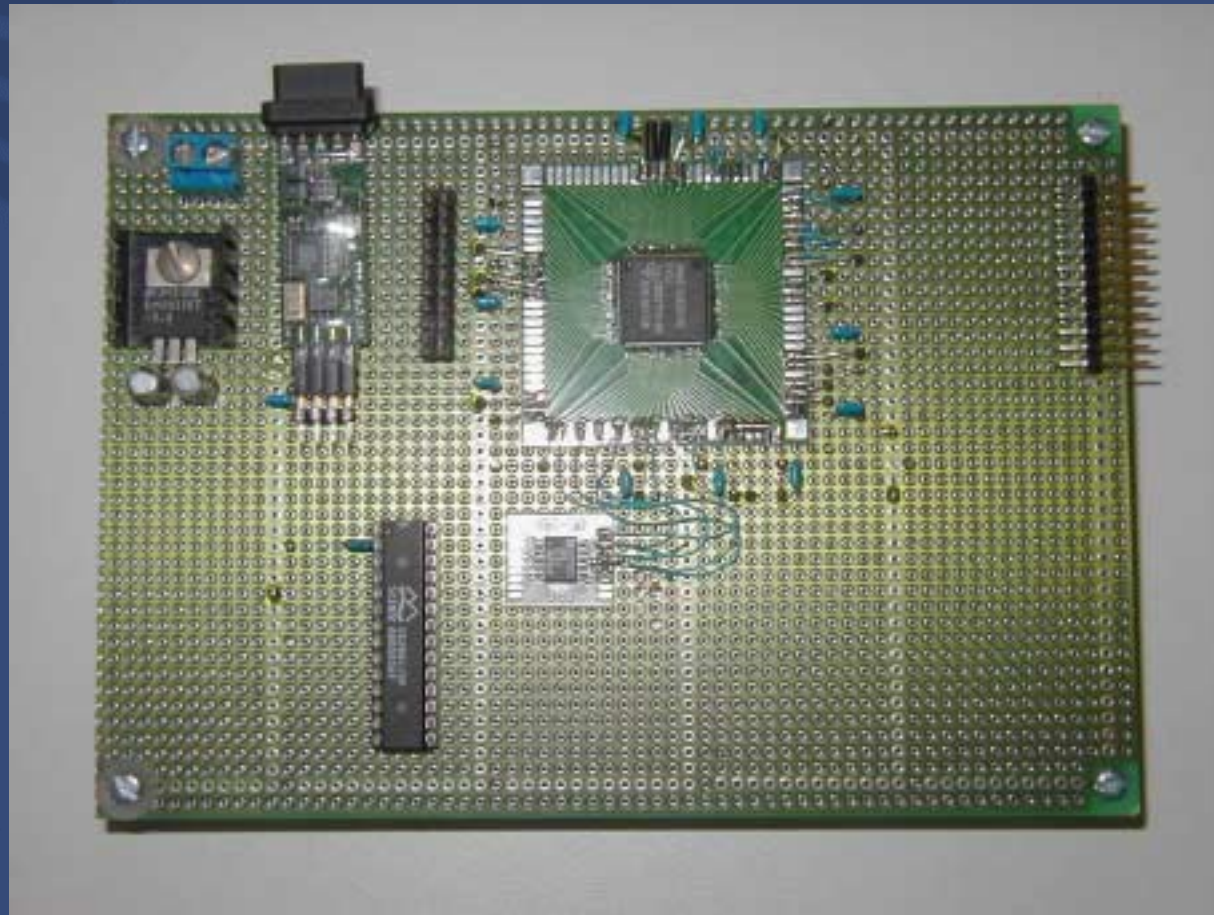
Current Status

- Modem development
  - Many ports in process
    - Analog SHarc & 2100 series, TI
    - Software (PC based) designs
  - K3DS establishing an open API between vocoder & modem
    - Serial interface
    - Will select a technology for the DSP motherboard

Summary

- Digital Voice will change Amateur Radio as we know it today
- TAPR is committed to delivering a total kit while maintaining an open interface for experimentation
- Watch the web page and PSR for progress

Web Resources

- Charles Brain G4GUO experiments
  - www.chbrain.dircon.co.uk/dvhf.html
- Dennis Silage – K3DS Vocoder 2/Open API
  - www.temple.edu/k3tu/digital_voice.htm
- DVS Inc. – AMBE hardware
  - www.dvsinc.com/
- TAPR Digital Voice page
  - www.tapr.org/tapr/dv/digitalvoice.html
- ARRL – Digital Voice references\
  - www.arrl.org/tis/info/digivoice.html