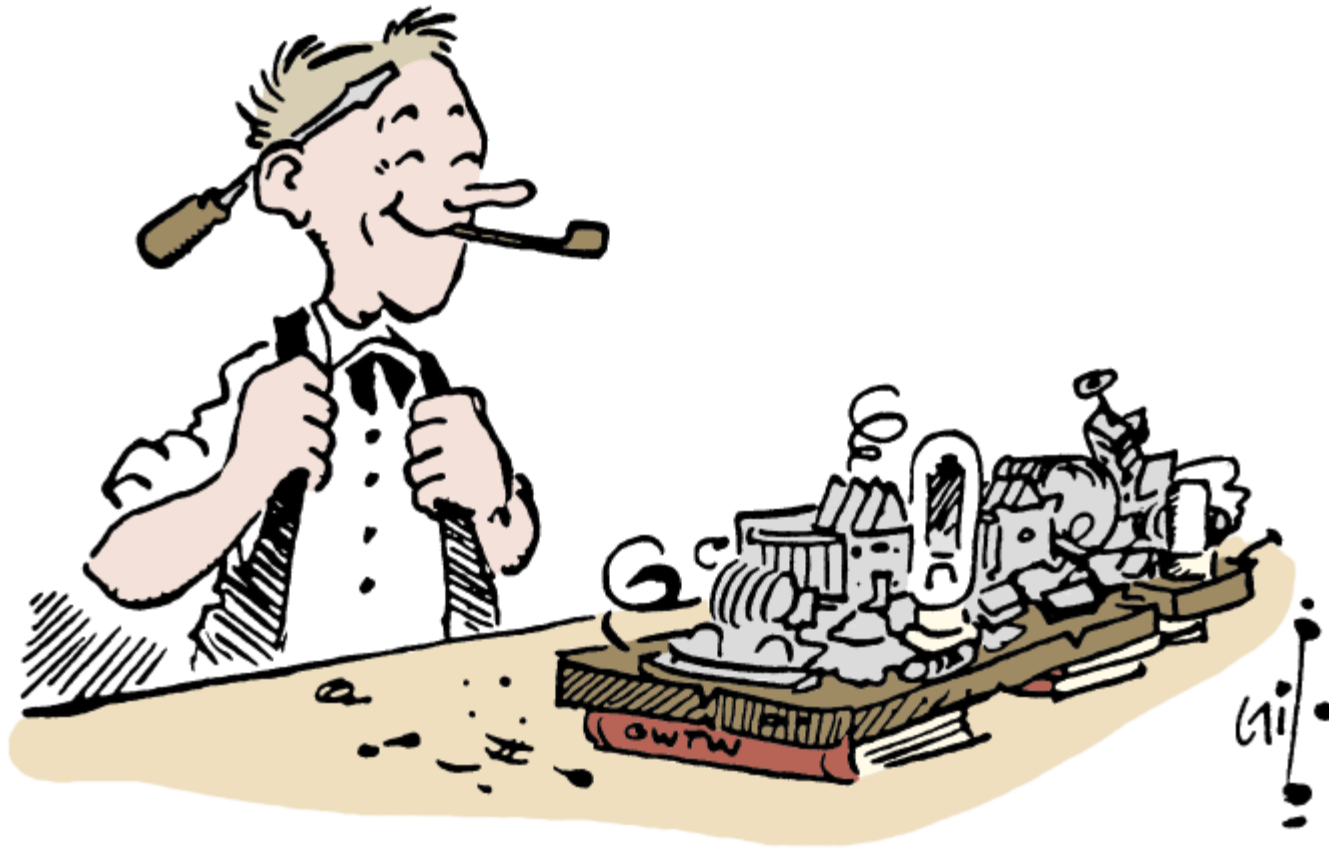


Extending D-Star



Jim Moen – K6JM

Artwork by
"Gil" Gildersleeve
W1CJD

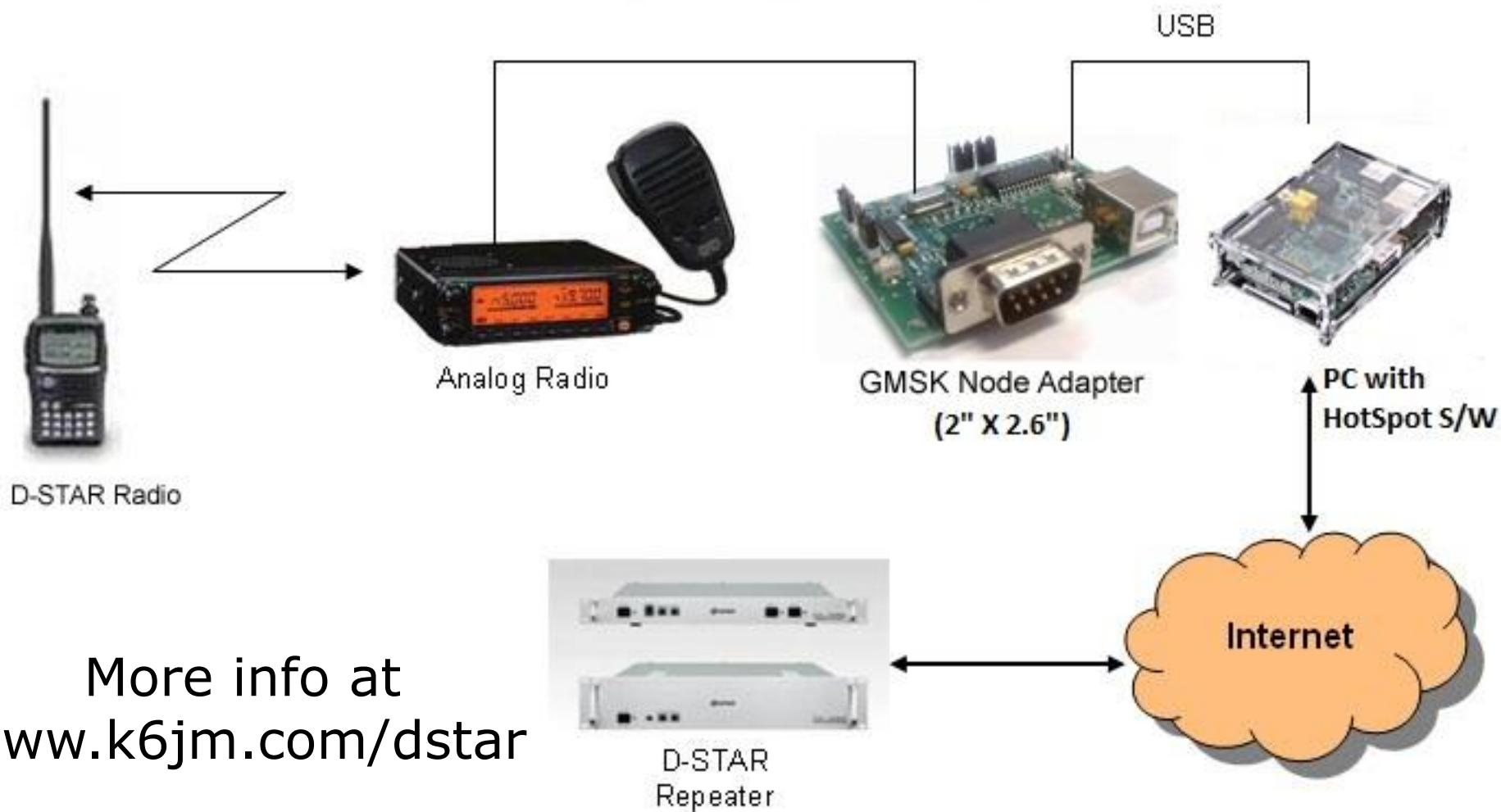
Buy "Gil - A Collection
of Classic Cartoons
from QST" at the ARRL
store

Is ICOM the only D-Star Supplier?



- ICOM makes great D-Star radios for DV/DD
 - Including 2820, 31A and the new 51A
- Internet Labs offers DV Dongle, DVAP & much more, like the newly announced DV Pi
- Hams are extending D-Star with DIY projects
 - GMSK Modems to create inexpensive HotSpots & Repeaters using analog FM radios
 - Software (mostly free) to extend D-Star functions
 - D-Star Adapters to add D-Star compatible DV to analog radios
- This is now a highly active and creative area
- Multiple vendors are extending D-Star

What's a HotSpot?



More info at
www.k6jm.com/dstar

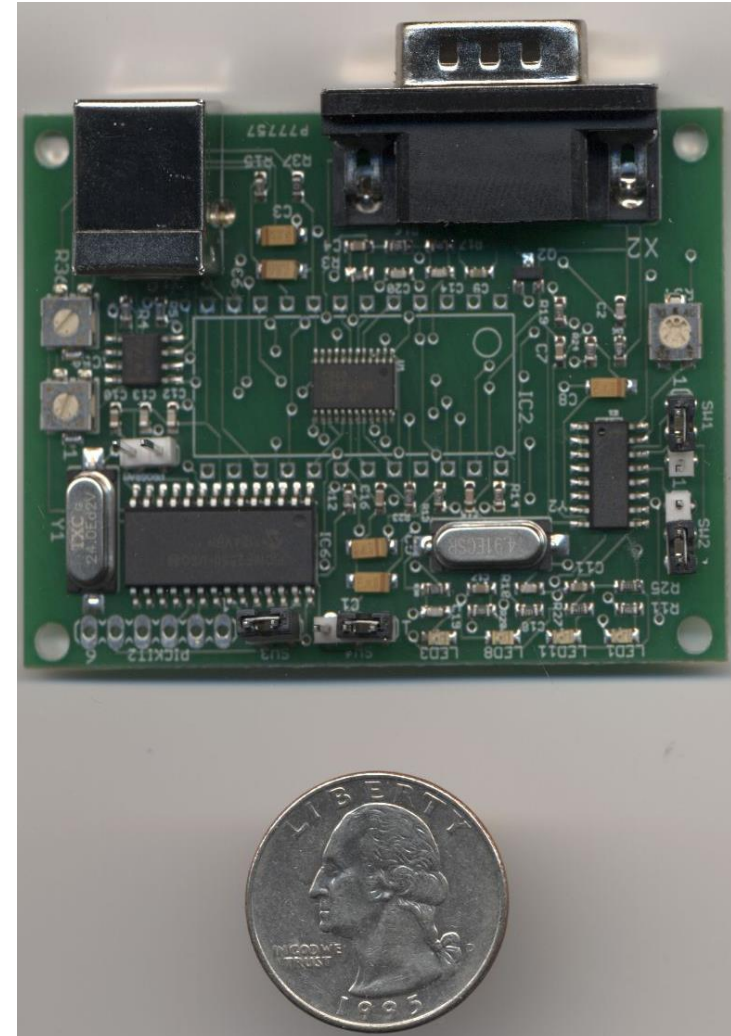
Why HotSpots?



- **Brings D-Star network to your neighborhood**
 - If your QTH has no RF access to a D-Star repeater
 - Or (like my QTH) is in a multipath shadow
 - Or you want to link to whatever repeater whenever you want
 - Or you need extra power for extra range
- **It's an interesting Do It Yourself project**
- **May save some money, especially using Raspberry Pi or BeagleBone Black for the “pc”**

Just what is a GMSK Modem?

- **Converts digital signals to tones for transmitter**
- **Converts received tones to digital again**
- **Decodes the gmsk protocol (headers, routing info)**
- **Does NOT decode or generate Digital Voice stream**
- **Can be used with DV Dongle and PC mike/speakers to add DV to analog radio**

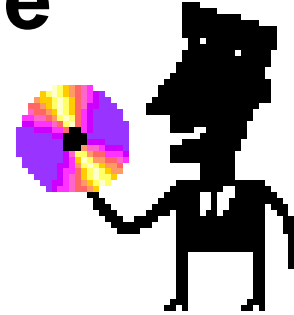


GMSK Modem Sources

- **Fred van Kempen PA4YBR**
 - <http://www.dutch-star.eu> Provides “mini hotspot” boards, firmware and software.
- **Matrix Circuits & MoenComm**
 - <http://www.moencomm.com> distributes boards based on PA4YBR’s design, comes with DUTCH*Star firmware and tools.
- **Satoshi Yasuda 7M3TJZ/AD6GZ**
 - <http://d-star.dyndns.org/> Designed the first Node Adapter. Also produces firmware and tools.
- **DVRPTR Project**
 - <http://shop.dvrptr.de/> Uses DSP firmware for GMSK modem function. Provides software. They plan to offer new boards with embedded AMBE chip.



HotSpot/Repeater Software



- **DVAR Hot Spot – Mark McGregor KB9KHM**
 - First and still popular
 - Easy to configure
 - Supports DPlus linking
- **WinDV – DUTCH*Star – Fred van Kempen PA4YBR**
 - DPlus, Dextra, DCS linking, ircDDB Gateway & Callsign Routing
 - DPRS-APRS interface
 - Works with GMSK Modem, DVAP, DV Dongle
 - DTMF commands over RF and more...
- **GMSK Repeater & ircDDBGateway – Jonathan Naylor GK4LKX**
 - Windows and Linux
 - DPlus, DExtra & DCS, ircDDB Gateway & Callsign Routing
 - STARnet Digital
 - Full function, yet fits on a small Linux pc like Raspberry Pi
- **FREE STAR* – Ramesh VA3UV and Scott Lawson KI4LKF**
 - Windows and Linux
 - Linking to all major reflector types
 - Full Function
- **DVRPTR Control Center**
 - Works with DVRPTR boards
 - DPlus, DExtra, DCS, CCS & Callsign Routing

Different modem Architectures



- GSMK signal processing in IC chip, firmware on board (classic GSMK modem)
 - Host pc does networking and interfacing
 - Board firmware handles time-critical functions
- GSMK signal processing in IC chip, simple firmware (In prototyping)
 - Host pc does networking, GSMK management
 - Most firmware logic moved to host pc
- Firmware does GSMK DSP (DVRPTR)
 - Host pc does networking and interfacing
 - Board firmware more complex, hardware simpler

Star*Board Matrix Circuits



- Star*Board GSMK Modem
 - Launched Fall 2011, based on PA4YBR design, DUTCH*Star firmware
 - Reliable, easy to configure
 - Distributed by MoenComm – www.moencomm.com
- Star*Board DT new design under development
 - Platform for D-Star, CODEC2, any new digital voice protocol
 - Designed by Rick Schnicker KD0OSS of Matrix Circuits
 - Two processors, AVR32 for DSP, ARM9 for control functions
 - Embedded AMBE chip
 - USB, ethernet, mike/speaker connector
 - Hardware design complete – developing firmware, launch Q4
 - Firmware completely Open Source

Shameless Plug



MOENCOMM
DIGITAL AMATEUR RADIO



- I sell the Star*Board Node Adapter
 - Build your own Hotspot or D-Star compatible Repeater
 - Includes DUTCH*Star firmware
 - Normally \$119 plus S&H
 - Great support



Special Show Price with free S&H

- www.moencomm.com/dayton13