HARDWARE FOR DATA TECHNIQUES: 2022
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USEFULNESS: The Radio Hardware Assets discussed below provide you with the ability to do most if not all of the following data techniques:	
BROADCAST (1-to-many) type techniques that may work well to a group but don't have 100% error correction	**Individual to Individual ARQ techniques ("connected") that allow 100% error correction**
FT8 JS8 MT63 FSK MFSK PSK31 Contestia Olivia FAX Hellscriber CW Unconnected AX.25 (UI packet)	Any of the techniques in the other column when paired with FLARQ suite of NBEMS. All WINLINK techniques, including ARDOP, VARA, connected AX.25 (Packet), WINMOR (now deprecated)

INTERNAL Interface (Already built in)	More and more HF radios already have a soundcard built-in and all you need to add is a computer and a USB connector. Examples include many of the later ICOM HF transceivers, as well as Kenwood and Yaesu. The following list may not be totally inclusive, but is a start for shoppers: Elecraft K3 Elecraft K4 Flex 6400M ICOM 7100 (includes VHF) ICOM 7200 ICOM 7300 ICOM 7410 ICOM 7610 ICOM 9100 ICOM 705 (includes VHF) Kenwood TS-590 Kenwood TS-590SG Kenwood TS-890S Kenwood TS-990S Yaesu FT991 Yaesu FT991A - All Bands, all modes, soundcard!

	Yaesu FT-DX3000
	VHF/UHF built in AX.25 TNC: Kenwood TM-710GA https://www.kenwood.com/usa/com/amateur/tm-d710ga/ *(If this is just a TNC, it may not be able to do modes beyond AX.25)* Handheld Triple band with built-in TNC: Kenwood TH-D74A & Bluetooth https://www.kenwood.com/usa/com/amateur/th-d74a/ *(If this is just a TNC, it may not be able to do modes beyond AX.25)*

Although one of the most popular modes of all ham radio right now is FT8 (a soundcard data mode) and that may be why so many newer radios are coming out with built-in soundcards -- but that doesn't mean that many of us don't have older radios that would work fine with an external interface to a soundcard system.   The market is **hot** with many solutions now:

External Interface #1	Tigertronics SIGNALINK https://www.tigertronics.com/slusbmain.htm You CAN purchase their cables - we recommend their cables for MINI-DIN (6Pin) **SLUSB6PM** (used on many Japanese transceivers, and a standard) and BAOFENG **SLUSBHTW** (Used on various Baofeng, Wouxung and Kenwood HT's: https://www.tigertronics.com/pricing.htm#Extra Radio Cable for the following Baofeng, Kenwood, and Wouxun HTs: You CAN purchase their jumper module that works with the above cables (https://shop.tigertronics.com/SignaLink-Plug-Play-Jumper-Modules_c5.htm) -- but this is an unnecessary $10 purchase + shipping because Signalink's some with jumpers and you can easily install those jumpers YOURSELF Pin 1 --> Mic Pin 2--> GND (any of the ones provided) Pin 3--> Push to Talk (PTT) Pin 5--> Receiver audio The above jumpers are what we STANDARDIZE ON in Alachua County. For almost ALL OTHER RADIOS than the above, we suggest that you MAKE YOUR OWN CABLE for your radio, particularly when it involves nothing more than a modular 4, 6 or 8 pin telephone-plug type connector, or an avilable circular DIN or other connector. We can guide you to make the connections and the experience of building your own connector will signficantly increase your expertise.

	You CAN purchase cables, but often they will not work with the above simple jumper setting, leading you to have to change jumpers when you go from radio to radio. Doing it our Alachua County way (all signalinks have the above jumpers, and the cables are made to work with those) makes all our systems much more compatible.
External Interface #2	DIGIRIG https://digirig.net/product/digirig-mobile/ This competitor to Signalink, does not involve internal jumpers. • With this device you will need to choose between several different types of CAT control-type interface standards: • https://digirig.net/understanding-rig-control-options/ • Duplex serial CAT with logic levels (Yaesu FT8XXX and Xiegu) • Duplex serial CAT with +/- 12V (RS232) levels (requires a jumper change on the board of the DIGIRIG) • Icom CI-V serial CAT (an Icom standard that works across huge number of radios) Requies a jumper chane on the board of the DIGIRIG • USB to CAT -- very new radios require connection from computer direct to radio and DIGIRIG doesn't participate in that. You will also need to get their set of cables for your particular radio
External Interface #3	Build your own!! This is not that difficult and we have our own project for doing so. Occasionally we hold LabNLunches to build these or you can get one of our pcb's and do it yourself. You'll have to deal with the cables, much as above