# Using Wires-X with Yaesu Digital Radios

N5RWK, February 25, 2020

What is Wires-X?

- Acronym for

  Wide-coverage **I**nternet **R**epeater **E**nhancement **S**ystem

- Uses local nodes (stations connected to the internet via Windows PCs) to relay the communications of RF stations via the internet

- Nodes can be
  - A **Wires-X Node** (uses the HRI-200 interface box, and hosts a room on the internet). This room can be linked to an RF repeater such as the DR-2X we use in Bellville
  - A **Portable Digital Node Station** (certain model transceivers connected directly to the PC with the programming cable that came with the rig. There is no HRI-200 box, but it can connect to other rooms on the internet)

Wires-X System Diagram
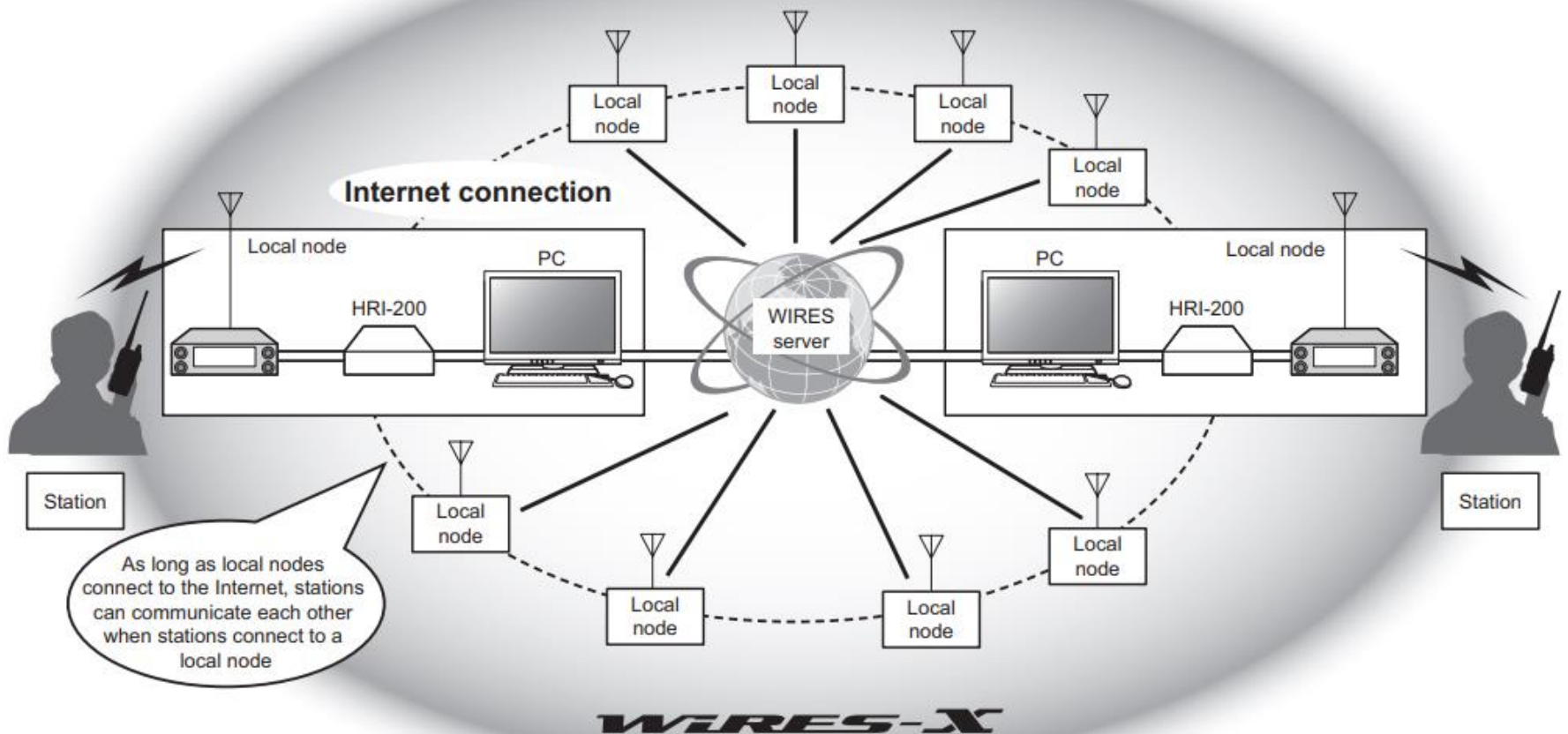
Wires-X: What Can You Do With It?

- You can communicate with other hams on the W5SFA repeaters when you are out of RF range
- You can communicate with other hams on repeaters or "rooms" in other cities and countries
- Using commands from your transceiver, you can link the W5SFA repeaters to other Wires-X rooms on the internet and communicate
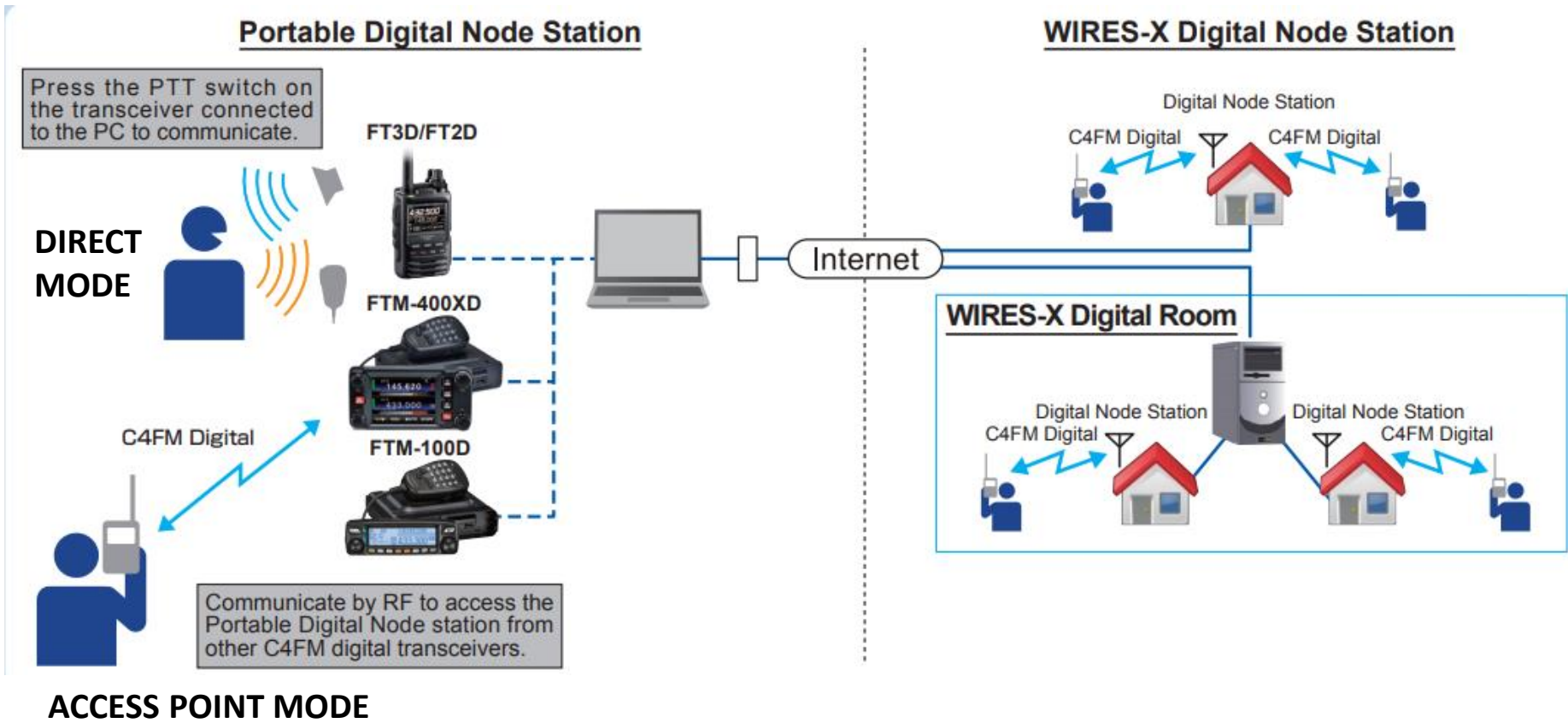
Wires-X and PDNs

- Radios supporting Portable Digital Node Station functionality:
  - FTM 100, FTM-400
  - FT2D, FT3D (handhelds)
- There are two modes of operation for Portable Digital Node Stations:
  - **Portable Digital Node Mode**: This mode supports Digital traffic ONLY
  - **Portable HRI Mode**: This mode supports both Digital and analog traffic and is the mode we will use

Wires-X and PDNs

- Note that Yaesu uses the term "**Portable Digital Node**" with two meanings (confusing!)
  - PDN (as a station) and PDN (as a mode of operation)
  - So you can have a PDN Station running in PDN Mode, or a PDN Station running in Portable HRI Mode
  - The **Portable HRI Mode** fits our use case better, so do not be concerned with PDN Mode
- Furthermore, a Portable Digital Node Station can be operated in two ways:
  - **Direct Mode** (no RF output; you use the microphone and speaker on the transceiver and communications go through the internet)
  - **Access Point Mode** (relays communications from nearby C4FM radios via RF to Wires-X rooms on the internet)
  - Unless you have a lot of radios, you'll probably want to use Direct Mode

"Direct" Mode vs "Access" Point Mode

Portable Digital Node Station

Press the PTT switch on the transceiver connected to the PC to communicate.

FT3D/FT2D

DIRECT MODE

FTM-400XD

C4FM Digital

FTM-100D

Communicate by RF to access the Portable Digital Node station from other C4FM digital transceivers.

ACCESS POINT MODE

Internet

WIRES-X Digital Node Station

Digital Node Station

C4FM Digital   C4FM Digital

WIRES-X Digital Room

Digital Node Station
C4FM Digital

Digital Node Station
C4FM Digital

How to Set Up a PDN (1)

- Register on the Yaesu Wires-X web site
  - https://www.yaesu.com/jp/en/wires-x/index.php
  - May take up to 48 hours or more to get confirmation
- Install the Wires-X software from the site above on your Windows PC, laptop or tablet
- Install the USB driver for the transceiver's programming cable
  - Make sure you have the latest firmware installed on your transceiver!
- Connect the cable to the transceiver and Windows box

How to Set up a PDN (2)

- Put the transceiver into Portable HRI mode (Wires-X will be displayed on screen during power up, along with a 5 note tone)
  - FT-2D, FT-3D : hold down the "**X**" and "**BACK**" keys while pressing the power on button
  - FTM-100, FTM-400 : hold down the "**DX**" and "**GM**" keys while pressing the power on button
  - Select either Direct or Access Point mode
- Start the Wires-X software on the PC
  - The first time you will need to specify the communications port, and activate your radio ID on the Wires-X server
- The transceiver will now be connected to the Wires-X software running on the PC
- Yaesu has detailed step-by-step instructions are on their web site for your radio!
  - Look for the document titled, "Wires-X Portable Digital Node Function Instruction Manual (1908-E)"

How to Set up a PDN (3)

- Link to the PDN Instruction Manual:
https://www.yaesu.com/downloadFile.cfm?FileID=15237&FileCatID=265&FileName=WIRES%2DX%5FPDN%5FFunction%5FOM%5FENG%5F1908%2DE.pdf&FileContentType=application%2Fpdf
  - The manual has step-by-step instructions, and covers all four radios that support PDN

- Wires-X Room #63655 ("W5SFA-ROOM") – this room is connected by RF to the Bellville UHF/VHF repeater

- Next month (March) – should be able to give a demonstration

- W5/F6CNB (Remi) has successfully connected his F5ZLA repeater in France to ours – he may be on our net next Tuesday