Smartphone Control of DCC Locos

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Why Bother?

- Reduce number of cabs needed for an Op Session
- Save $$$$
- Attract younger operators?
- Another “Gee Whiz” tech toy to play with ⟵ *my reason!*

Attract younger operators?

- Opinion of twin 13-year old grandsons when handing them my NCE PowerCab throttle to run trains:

  “That’s so geek stuff, Grandpa!”

Attract younger operators?

- A month or so later, I handed them my iPhone now running the WiThrottle app:

  "That's cool! Hey Dad, look what Grandpa did!"

- Clearly, if it ain't on a phone, it ain't cool!

Topics to be discussed

- JMRI (briefly)
- WiThrottle app (iOS)
- Engine Driver app (Android)
- Raspberry Pi
- Connecting your smartphone
- Pi-SPROG *(if we have time)*

JMRI

- **J**ava **M**odel **R**ailroad **I**nterface
  - Free open-source download
  - Multiple components
    - Panel Pro
    - Operations Pro
    - Decoder Pro
  - Connects layout to computer with interface board (NCE, Digitrax, etc.)

JMRI

- Can be used to connect a wireless device
- Usually requires a separate router to establish a Wi-Fi access point

What Else Does JMRI Offer?

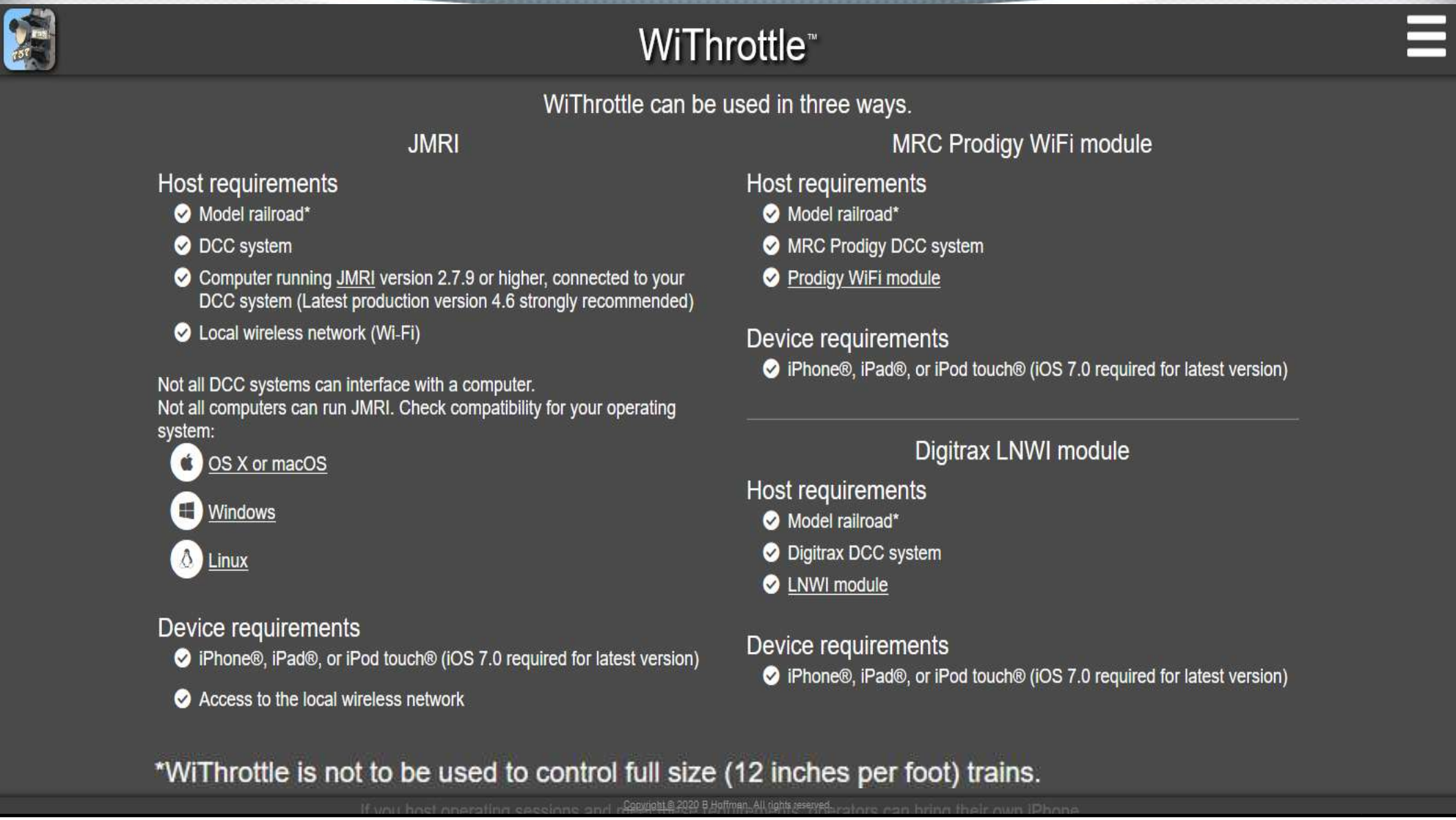
- Manage locomotive roster
- Virtual Throttle Cab
- WiThrottle Server
- Versions for OS X or MacOS, Windows, and Linux
- Excellent Youtube video at https://www.youtube.com/watch?v=XBsbz_ThfSo

What is WiThrottle?

- An easy-to-use interface to allow iPhone®, iPad®, and iPod touch® users to link to their model railroad with the popular JMRI® software, the Prodigy Wi-Fi module on an MRC™ Prodigy system, or the LNWI module on a Digitrax™ LocoNet™ system.
- What is it for?
  To control a model railroad using a wireless connection to a digital command control (DCC) system.
- Can I use it?
  If you have the ***necessary equipment***, or operate at a location which does, Yes!

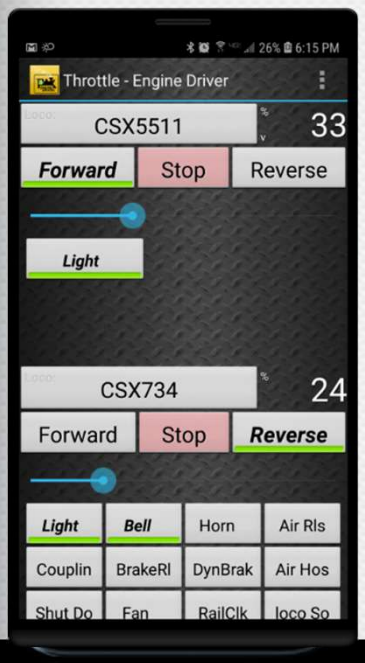
* all the above from www.withrottle.com

“necessary equipment”



What is Engine Driver?

- Essentially the same functionality as WiThrottle but for Android devices
- Currently has more capability than WiThrottle Lite
- Except for supported devices, same requirements as WiThrottle



So, What Do We Need?

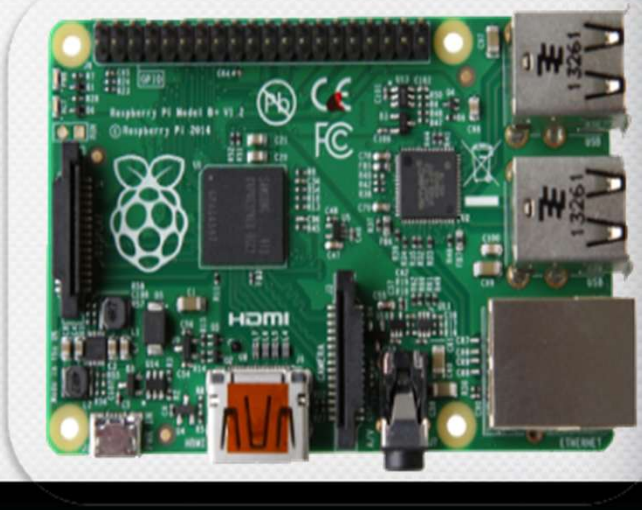
- A DCC-powered track and DCC equipped locomotive
- *A computer running JMRI*
- An interface board to connect the computer to the DCC system
- A Wi-Fi network
- A smartphone or tablet connected to the Wi-Fi network

“A computer running JMRI”

- Could be a desktop PC
- Could be a laptop
- Or we could use a Raspberry Pi!

What is a Raspberry Pi?

- The Raspberry Pi is a low cost ($35-$45), credit-card sized computer that can output to a computer monitor or TV and can accept input from a standard keyboard and mouse.
- RPi runs a Linux-based operating system (Raspian Buster)



Raspberry Pi

- What's on a RPi Model 3 B+
  - Quad-Core 64-bit, 1.4 GHz, 1 GB RAM
  - built-in Wi-Fi (5GHz 802.11ac) and Bluetooth (4.2) connectivity
  - gigabit Ethernet port
  - 4 USB 2.0 ports
  - HDMI port
  - micro SD card port

We have the hardware, now what?

- We could program the RPi with all the required software (JMRI, Wi-Fi access point, etc.)
  - We need to connect a display and keyboard to the RPi
  - *ANYONE KNOW LINUX?*
- Or we could use a pre-configured disk image with everything ready to go

Steve Todd's RPi-JMRI Image

- Pre-configured disk image containing everything you need
- Updated fairly frequently
- Full information at https://mstevetodd.com/rpi
  - download to computer
  - Use balenaEtcher to load image onto a microSD card
  - Insert microSD card into RPi

So Let's Fire It Up

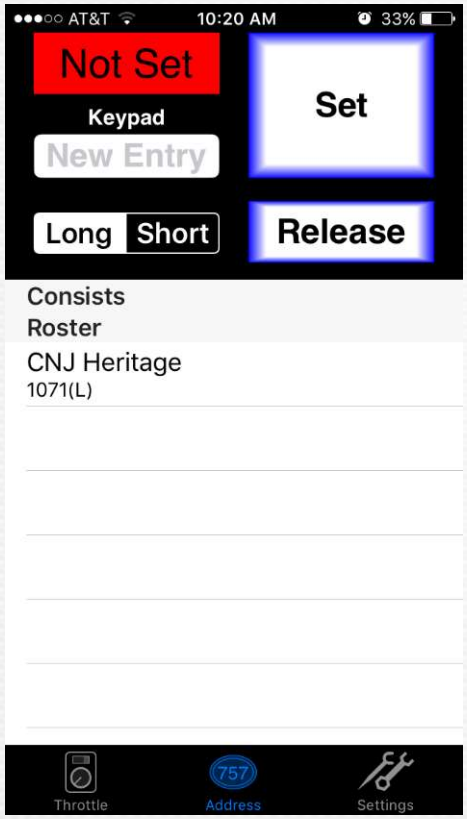
- Get everything connected
- Turn on the power
- Watch the pretty blinking lights
- The RPi will boot up
  - Establishes a Wi-Fi access point
  - Starts JMRI
  - Starts a WiThrottle server
  - Takes about 30 seconds or so
  - Waits for us to do something

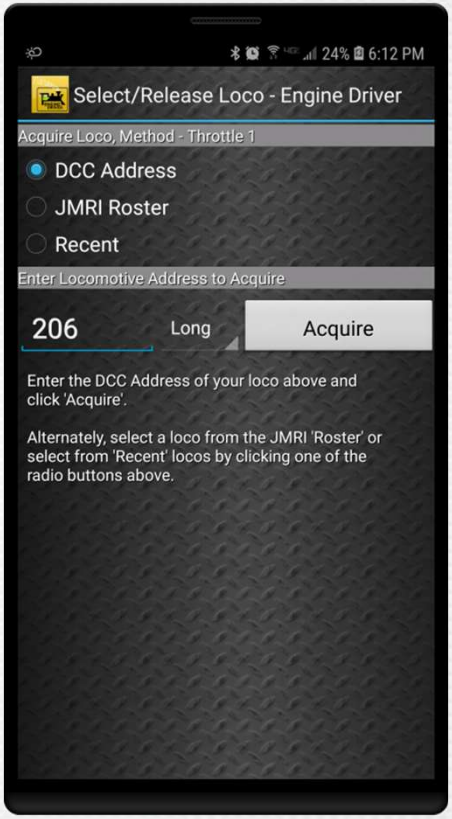
Connecting Your SmartPhone

- Assuming you have the WiThrottle or Engine Driver app on your device……
- Go to Settings / Wi-Fi
- Select network “RPi-JMRI”
- Enter password: “rpI-jmri” (capital “eye”)
- You’re now connected to the RPi!

Let’s Run a Locomotive

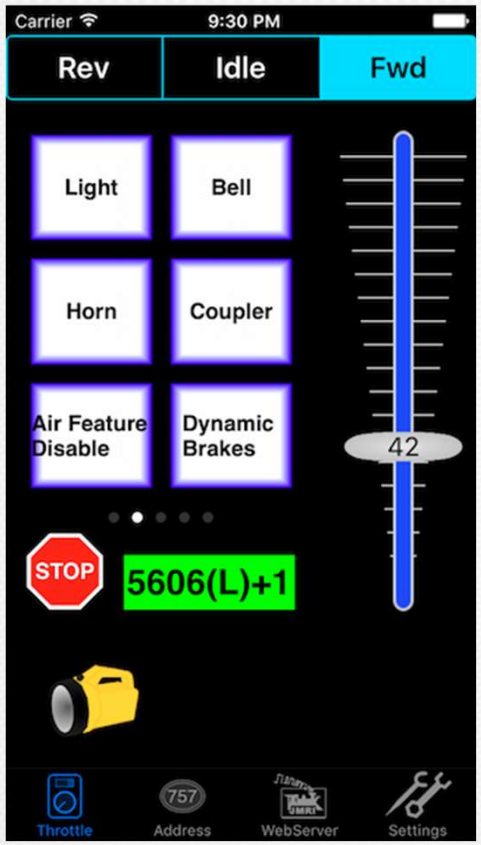
- Start WiThrottle or Engine Driver
- Select a Loco

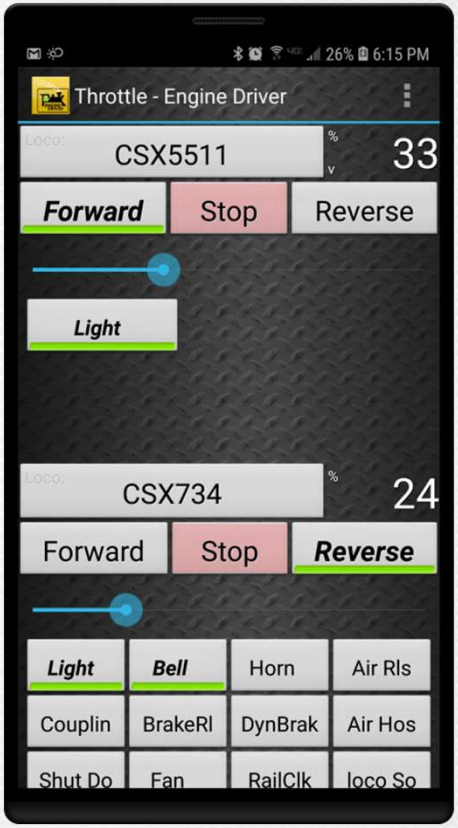




Let's Run a Locomotive

- Go to Throttle





- *“Hey...Look what Grandpa did!”*

- Thank you!
- Questions?

Postscript

- But wait! There's more….

Pi-SPROG!

- Essentially a "son of SPROG"

What is a SPROG?

- A SPROG is a DCC device which can function as a booster, or as a programmer for DCC decoders
- It requires a computer for operation and control

What is a Pi-SPROG?

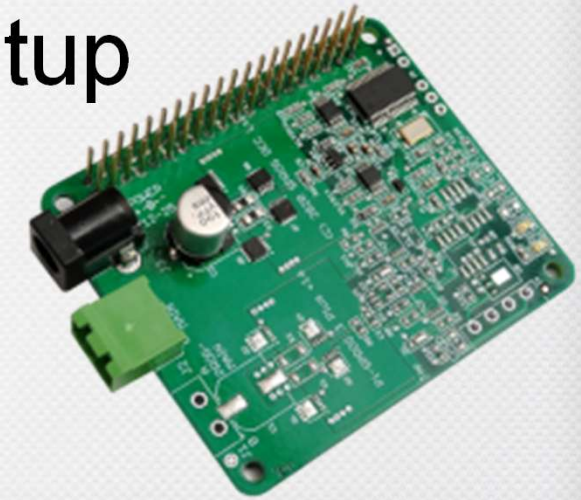
- A Pi-SPROG is a “low cost” DCC programmer-controller that connects directly to a Raspberry Pi
- Same functionality as a SPROG but in a smaller form factor

Pi-SPROG

- Offers all the capabilities to run a DCC layout, and/or program DCC decoders.
- With appropriate software, same wireless function as the RPi just demonstrated

Pi-SPROG

- No need for an NCE, Digitrax, etc. DCC system!
- Only 2.5A, but great for a small layout or programming track setup
- Another “Gee Whiz” tech toy to play with!



- Thank you!
- Questions?