

JMRI FOR EVERYONE... UPDATED!

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YOUTH IN MODEL RAILROADING PARENT

HERE'S WHAT TO EXPECT

- DCC-Related Model Railroad Technologies
- What is JMRI and how does it fit in?
- Looking forward...

HERE'S WHAT TO EXPECT

- This is a technology presentation
- My intention is to inform, educate, and intrigue
- If you have questions, please ask!!!

MODEL RAILROAD TECHNOLOGIES

- The DCC standard has been with us over 20 years!
- The standard covers what goes on between the rails (command station) and the decoder
- Everything else is left up to the manufacturers

MODEL RAILROAD TECHNOLOGIES

- All DCC systems have a proprietary CAB system
- Some DCC manufacturers are extending DCC with proprietary enhancements
- Signaling, block detection, and other layout automation is also driving enhancements to DCC

MODEL RAILROAD TECHNOLOGIES

- DCC itself is here to stay for a while...
- OpenLCB has an NMRA committee
(based on the auto industry's CANbus)
- CMRI now has an NMRA committee
(Bruce Chubb's Interface)
- JMRI is an Open Source project

WHAT IS JMRI?

- Java Model Railroad Interface
- Software technology designed for model railroads
- Open Source Software (i.e it's free!)
- <http://www.jmri.org>
- Works on Windows, Linux, and Mac!!!
- Supported by model railroaders who happen to be programmers
- You too can contribute to its growth and success

Computer

WiThrottle

CATS

JMRI

JAVA

Interface

Interface

Command Station

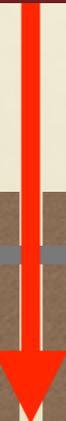
CMRI

Booster

Signals, Block Detectors, Gates, etc...

Throttle

DCC



JMRI COMES WITH...

- Decoder Pro for decoder programming
 - Hundreds of decoder definitions
 - You can add your own or download more
- Panel Pro for designing/operating dispatch panels
- Logix programming language for layout automation

JRMI AS A PLATFORM

- CATS runs on top of JMRI
- CMRI Interfaces to JMRI
- New cpNode by Model Railroad Control Systems updates CMRI hardware based on Arduino
- JMRI can be run from a Raspberry Pi

DECODERPRO

- Do you like to read things like this?
- Do you like binary math?
- Do you like fiddling with the buttons on your throttle?

CV 29

Configuration Register 1

Description

CV 29 contains miscellaneous decoder configuration bits:

Bit 7						Bit 0	
0	0	EAM	STE	ACK	APS	F0	DIR

- Bit 0: DIR, Direction Bit
0 = normal operation
1 = direction bit in Speed/Direction instruction is inverted before processing.
- Bit 1: F0 Location
0 = F0 state is controlled by bit 4 of Speed/Direction Instruction (14 Speed Step Mode)
1 = F0 state is controlled by bit 4 of Function Group 1 Instruction (28 and 128 Speed Step Modes)
- Bit 2: APS, Alternate Power Source enable
0 = NMRA Digital Only
1 = Alternate Power Source enabled as set by CV 12
- Bit 3: ACK, Advanced Acknowledge Mode enable (not used)
0 = Advanced Acknowledge mode disabled.
1 = Advanced Acknowledge mode enabled.
- Bit 4: STE, Speed Table Enable
0 = Speed Table set by CV 2, 4 and 6.
1 = Use custom speed table selected by CV 25.
- Bit 5: EAM, Extended Address Mode enable
0 = Decoder responds to Primary Address in CV 1
1 = Decoder responds to Extended Address in CV 17-18
- Bit 6: Reserved for future use.
- Bit 7: Multifunction Decoder - Always reads as 0.

DECODERPRO

- Or is this easier to figure out?

The screenshot shows the 'Edit Roster Entry' window in DecoderPro. The window has a menu bar with 'File', 'Reset', 'Window', and 'Help'. Below the menu bar are several tabs: 'CVs', 'Sound / Volume Control', 'Function Output', 'Indexed CVs', 'QSI Misc.', 'Function Map', 'Lights', 'Analog Controls', 'Consist', 'Advanced', 'Sound', 'Sound Levels', 'Roster Entry', 'Function Labels', 'Roster Media', 'Basic', 'Motor', 'Basic Speed Control', and 'Speed Table'. The 'Basic' tab is selected. The main area contains the following configuration options:

- One byte (short) address
- Two byte (extended) address
- Active DCC Address: 363
- Primary Address: 3
- Extended Address: 363
- Address Format: Two byte (extended) address
- Locomotive Direction: normal
- FL Location: 28/128 speed step format
- Power Source Conversion: DC conversion enabled
- Manufacturer ID: 113
- Manufacturer Version No: 0
- Product Number: 0

DECODERPRO

- Eliminate conversion issues. No binary math!
- No lost decoder manuals--DecodePro knows about YOUR decoder!
- Simplify the presentation of the settings.
- A roster to save what you have setup!
 - And you can restore your decoder settings should something happen to the decoder.

DECODERPRO

- Programming Track Support
 - Identify the decoder automatically
 - Select by viewing the manufacturers list
 - Using the roster
 - But where do the decoder definitions come from?
 - They come from users!
 - JMRI is an open source community

DECODERPRO

- Ops-Mode Programming
 - Great for adjusting speeds, lights, sounds
 - Use the roster to keep track of what you set last time
 - Single CV option ‘when you just want to do it’

DECODERPRO

- Getting Started
 - Download and install from the JMRI web site
 - <http://www.jmri.org>
 - You need a connection between your computer and your test track
 - Command station & serial or USB adapter
 - The SPROG-II is a dedicated device for this purpose

DECODERPRO - ROSTER

- Save decoder settings
- Notes and photos about each locomotive
- Create custom function keys with labels

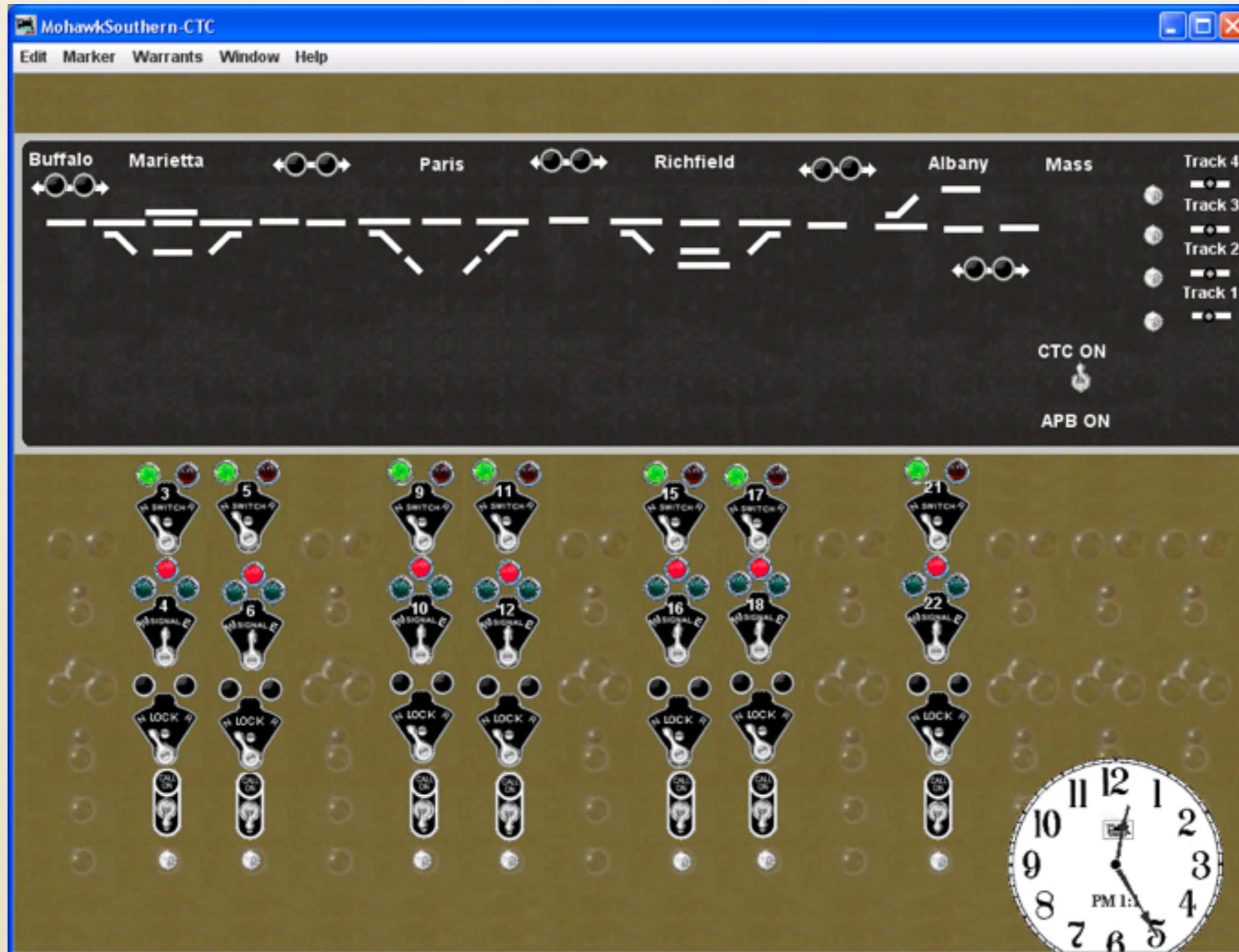
OPERATIONS

- Started as a catalog for rolling stock
- Grew into a traffic management tool
- Switch list generator
- Scheduler makes your industries really work
- Future work:
 - Train dynamic effects (weight, horsepower)
 - Automated Trains

PANELPRO

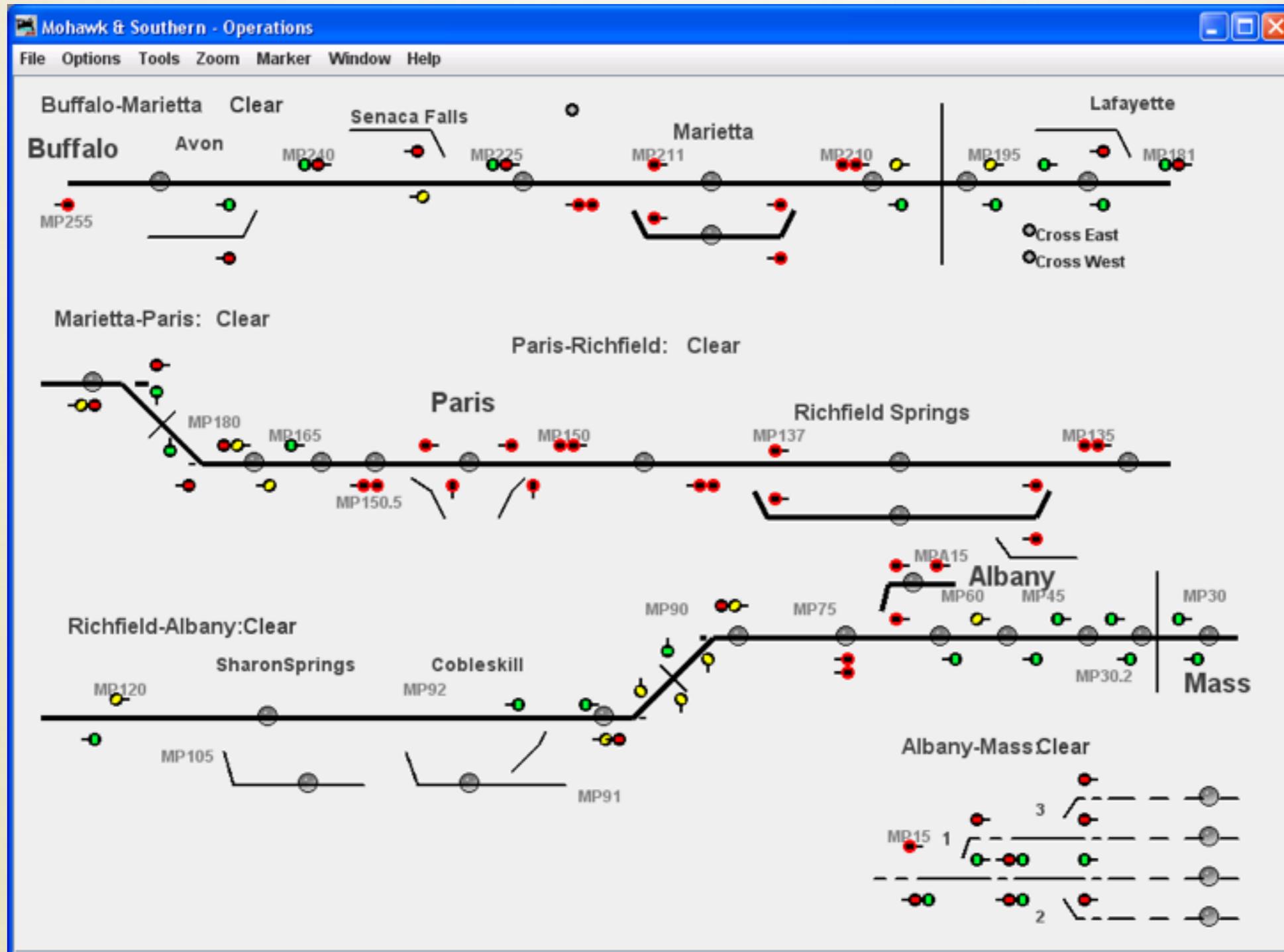
- PanelPro is for everything on a layout that's not a loco
- Two main parts:
 - Panel Editor
 - Layout Editor
- Controls turnouts and signals
- Displays sensors and status
- How many of your control panels have extra holes?

PANEL EDITOR - CTC EXAMPLE



Special thanks to Ken Cameron for providing this information from his Amherst Railroad Hobby Show clinic slides

LAYOUT EDITOR - EXAMPLE

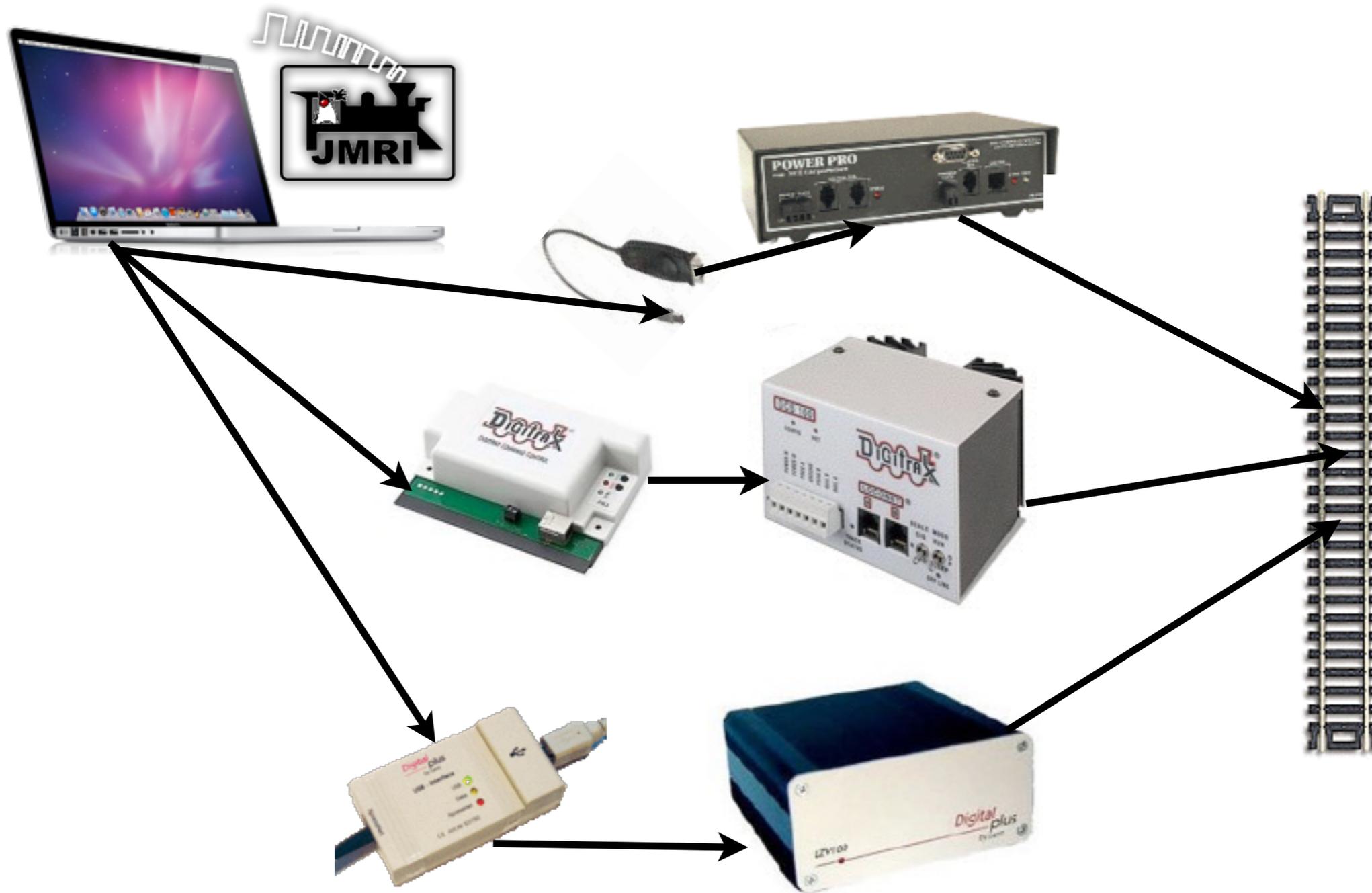


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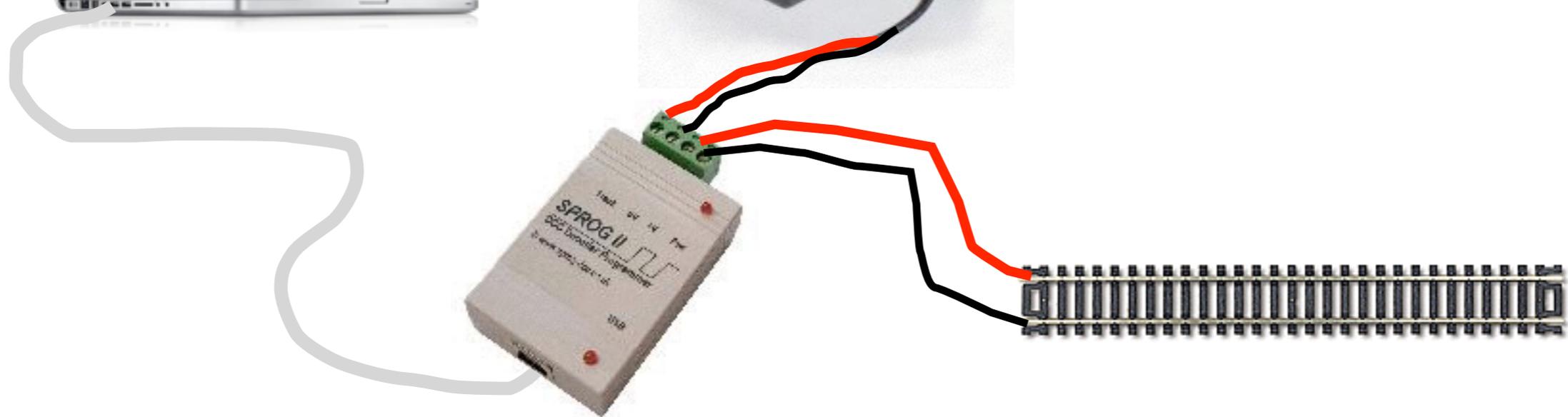
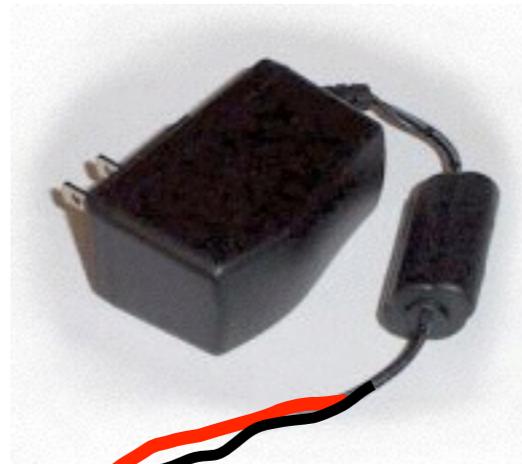
PANELPRO

- Features
 - Web mode to display panels on other monitors
 - Build multiple panels if needed
 - Dispatcher or physical view
- Shortcomings
 - You can't touch two things at once
 - Some graphics have small 'sweet spots'
 - Special track work might be hard to show

COMMAND STATION SETUP



TEST TRACK SETUP



OTHER CONNECTIONS

- Now that you have a computer hooked up...
- Use your smart phone or iPod as a throttle
 - Just need a WiFi connection and WiThrottle
- And you can read your locomotive's speed on a test track using the Bachrus MTS-DCC speedometer

WITHROTTLE

- Run WiThrottle Server in DecoderPro
- Unlimited Throttles!
- <http://www.withrottle.com>
- Free version available
- WiThrottle supports iPod Touch, iPhone
- Use Engine Driver for the Android
 - <http://enginedriver.rrclubs.org>
- Configurable screens for road or yard operations and controlling two locomotives



BACHRUS SPEEDOMETER

- Used for measuring speed
- Sets on a test track
- Rollers make the tra



DEMOS

- DecoderPro
 - Laptop programming of a decoder using the SPROG
- WiThrottle
 - Running a locomotive on the test track
- Bachrus MTS-DCC
 - Measuring scale speed on the test track