JMRI

Java Model Railroad Interface

Did I mention it's FREE!!

By Ken Cameron
Member of the JMRI Developer Team
Kcameron@Twcny.Rr.Com

PORTLAND DAYLIGHT EXPRESS
NMRA NATIONAL CONVENTION
2015

Quiz:

- How many have heard of JMRI?
- How many currently use JMRI?
- How many know others who use JMRI?
- How many think JMRI and decoders?
- How many think JMRI and layout control?
- How many think JMRI and operations?
- How many think JMRI and phone as throttle?

Intro

- I am your host, Ken Cameron
- Quick history of JMRI
- DecoderPro/3
- PanelPro
- Operations
- Other New Stuff
- Open Discussion

History

- **2001-2002 Mark Gurries gathered:**

  Bob Jacobsen, Dave Falkenburg, John Jabour

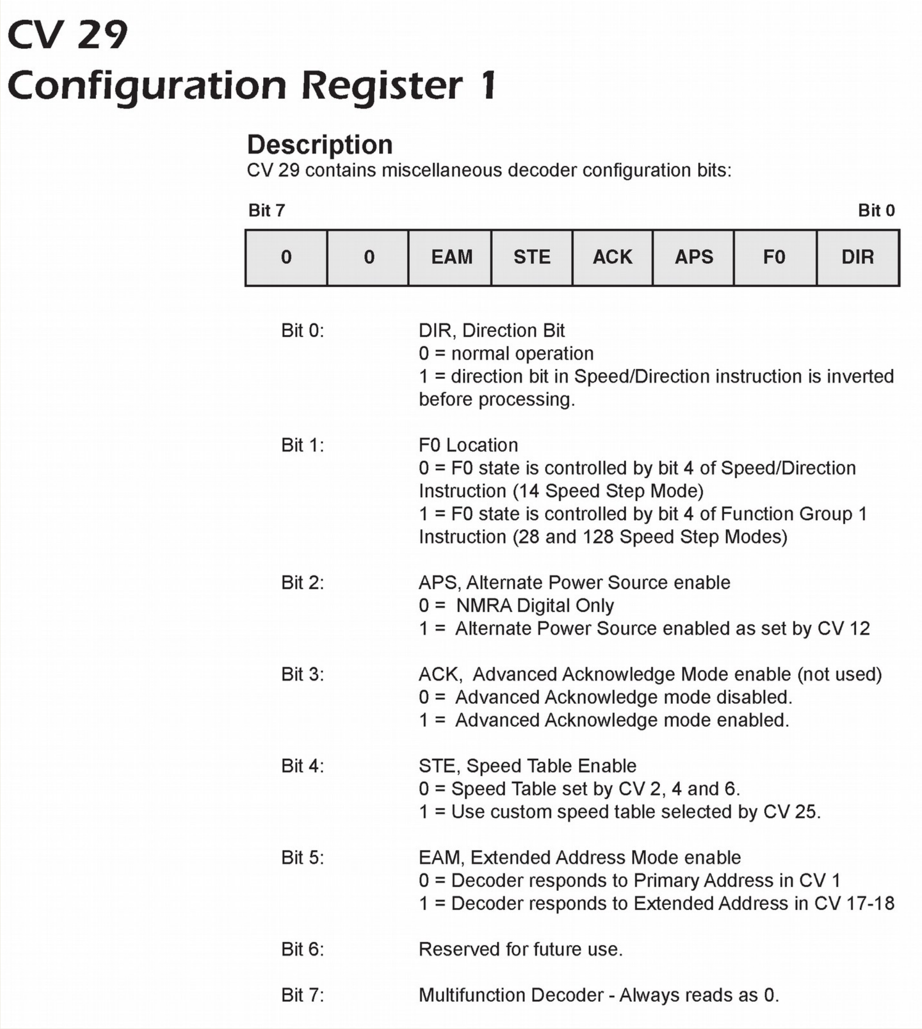
  - **to share ideas and projects they had been working on**
- **DecoderPro** ***October 28, 2002 - JMRI 1.1 released***
  - **Initial result of their teamwork**
- **PanelEditor – Nick Kulp & Bob Jacobsen, 2003-2004**
- **Layout Editor – Dave Duchamp, Dick Bronson 2006 - 2007, Pete Cressman 2009**
- **Non-connected Efforts Operations – Dan Boudreau 2009**

Organization of the JMRI Project

- Bob Jacobsen – Overseer & Mentor
- Developer Group
  - 15 to 30 actively working on code at any time
  - 25 to 50 regular contributors and supporters
- User Group
  - Started around October 2002, 189 email addresses
  - July 2004 grown to 1304 addresses
  - Jan 2007 we passed 2500 with 2752 addresses
  - Aug 2015 we had 8325 addresses

DecoderPro

- Do you like to read things like this?
- Deal with binary math?
- Lots of fiddling with the 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.

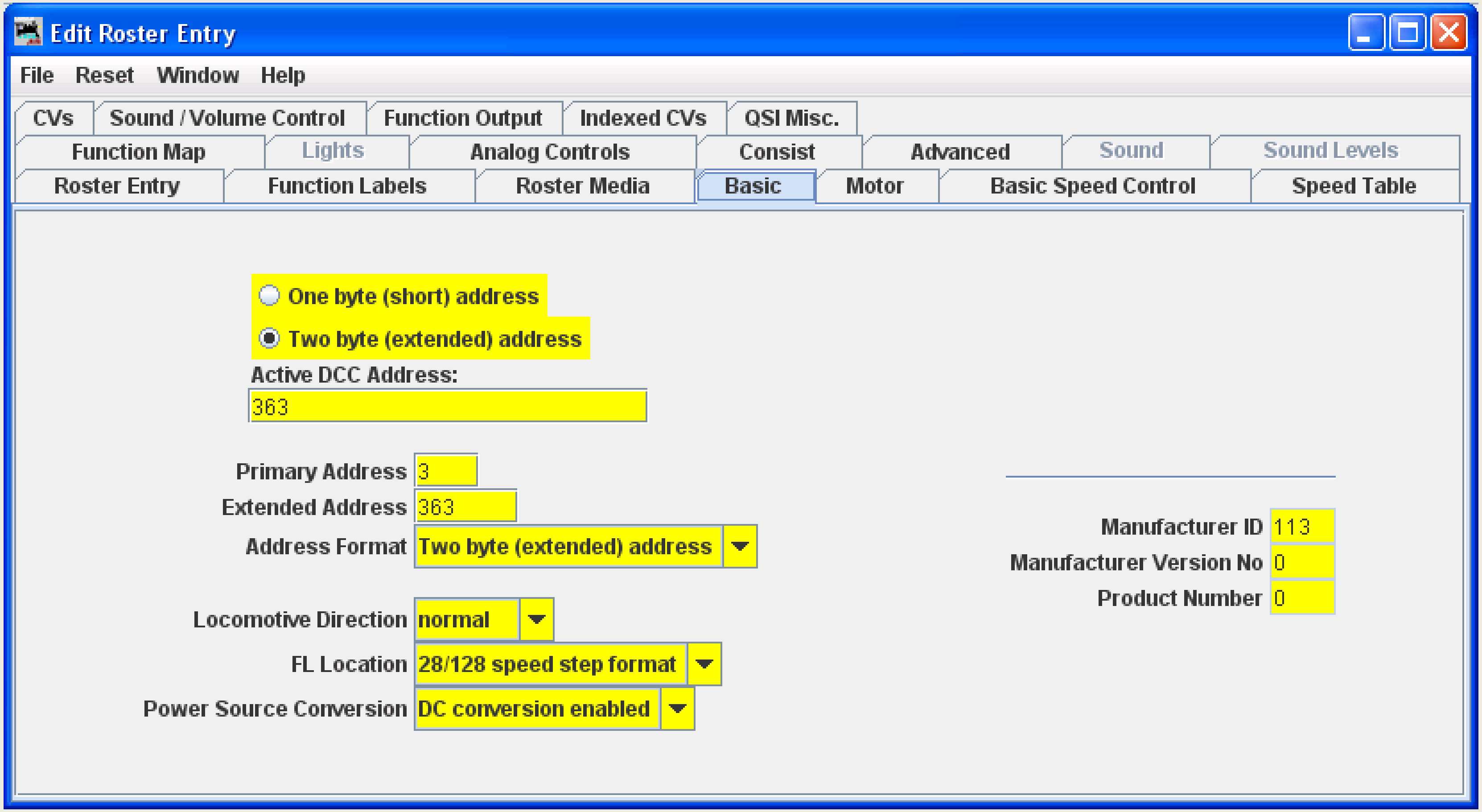
Bit 5: EAM, Extended Address Mode enable
0 = Decoder responds to Primary Address in CV 1
1 = Decoder responds to Extended Address in CV 17-18

Bit 6: Reserved for future use.

Bit 7: Multifunction Decoder - Always reads as 0.

DecoderPro

- Or is this easier to figure out?



○ 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!
- No lost decoder manuals.
- Simplify the presentation of the settings.
- A roster to save what you setup!
- DecoderPro3 – viewing by roster

Programming Track Support

- Identify Decoder
  - Why does it find so many decoders as possible?
- Select by viewing the manufacturers list
- Using the roster
- But where do the decoder definitions come from?
- They come from users!

Ops – Mode Programming

- Programming on the mainline
- You can’t read a decoder on the mainline
- Great to adjust 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’

Roster

- Saved decoder settings
- Notes
- Photos
- Custom function keys
- Great for inventory

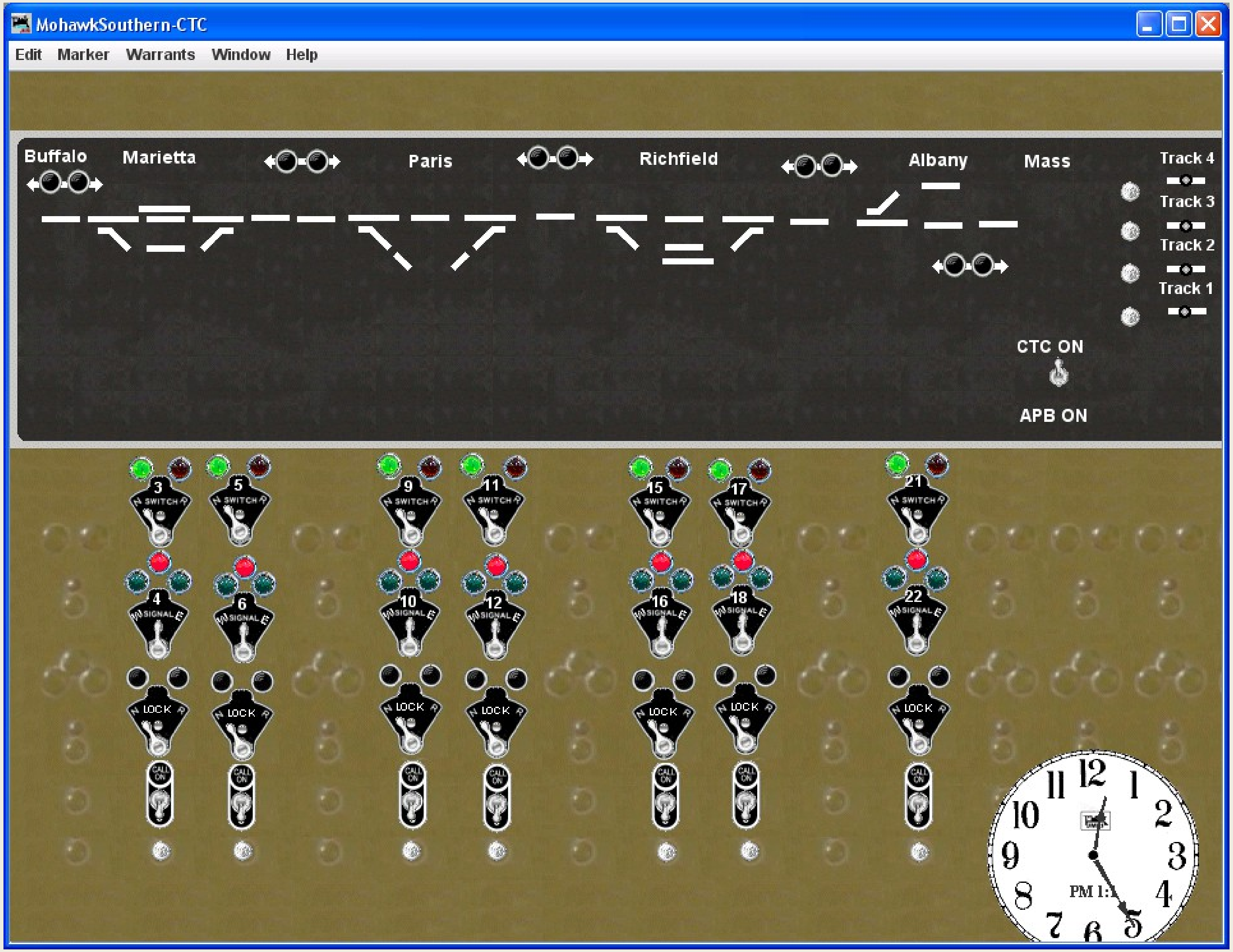
DecoderPro3

- Demo of DecoderPro3 main screen
- Explain roster details
- Show how tabs change with ‘Programmer Mode’

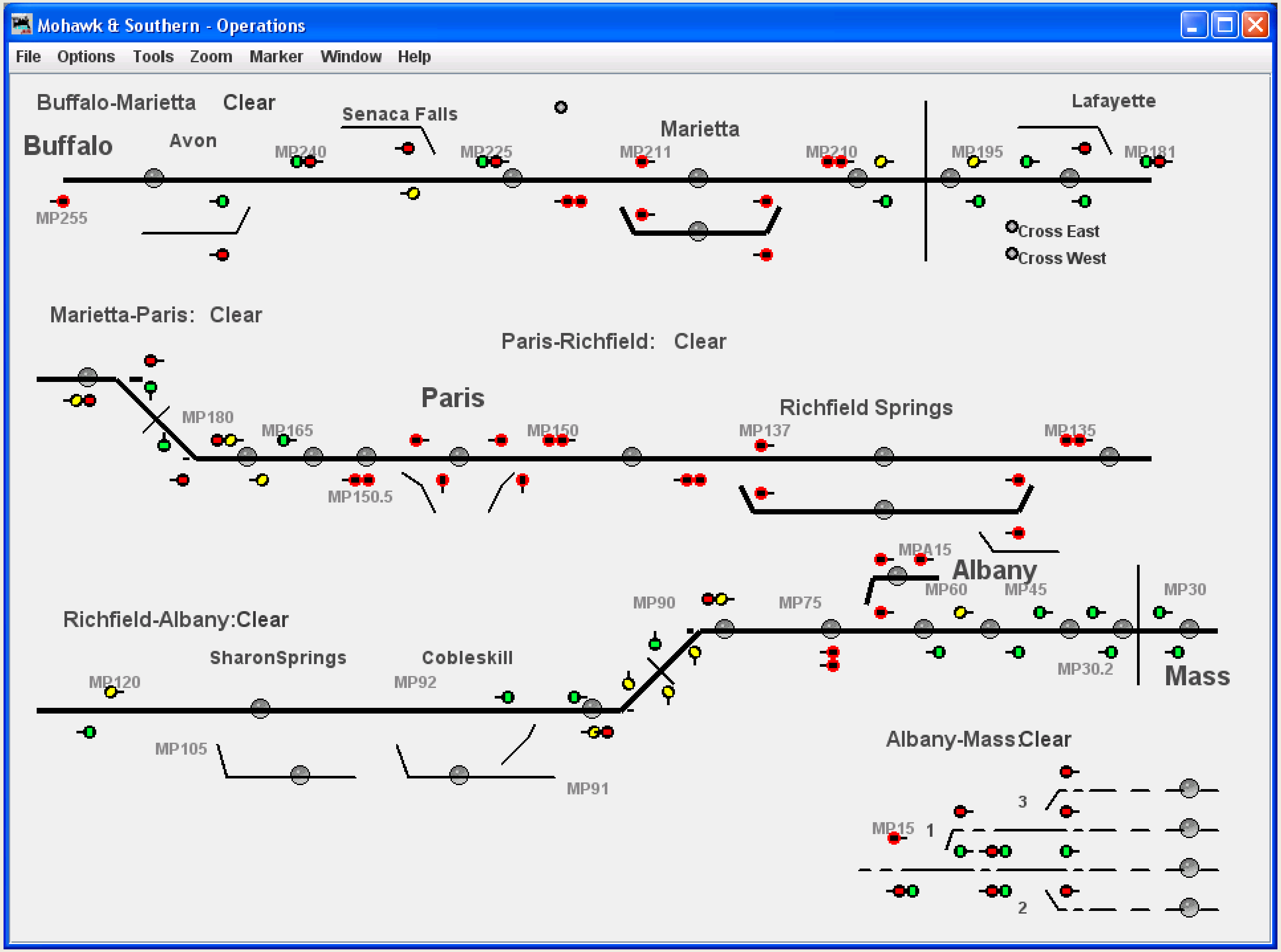
PanelPro

- PanelPro is for everything not a loco on the layout.
- Two main parts: Control Panel Editor/PE, Layout Editor
- Controls turnouts and signals.
- Displays sensors and status.
- How many of your control panels have extra holes in them?

Panel Editor – CTC Panel Example



Layout Editor - Example



PanelPro – Features and Shortcomings

- You can’t touch two things at once
- Some graphics have small ‘sweet spots’
- Web mode to display panels elsewhere
- Special trackwork might be hard to show
- Dispatcher or physical view: which to use
- Build multiple panels if needed

PanelPro Demo

- Skip for now, come to the desk for demos
- Live Screen vs Web Frame
- Panel Editor – original editor (icon based)
- Control Panel Editor – newer (icon based)
  - – but you can toggle between PE and CPE
- Layout Editor – Layout connection aware (vector based)

Operations

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

What is JMRI Operations ?

Operations is a major new addition to JMRI that provides for creating switch lists and manifests.

Added to JMRI by Dan Boudreau, who designed and developed the software.

Switch lists and manifests define where a car is located and how and where it should eventually be positioned after pick ups and drop offs.

Good documentation exists, including a set of demo files.

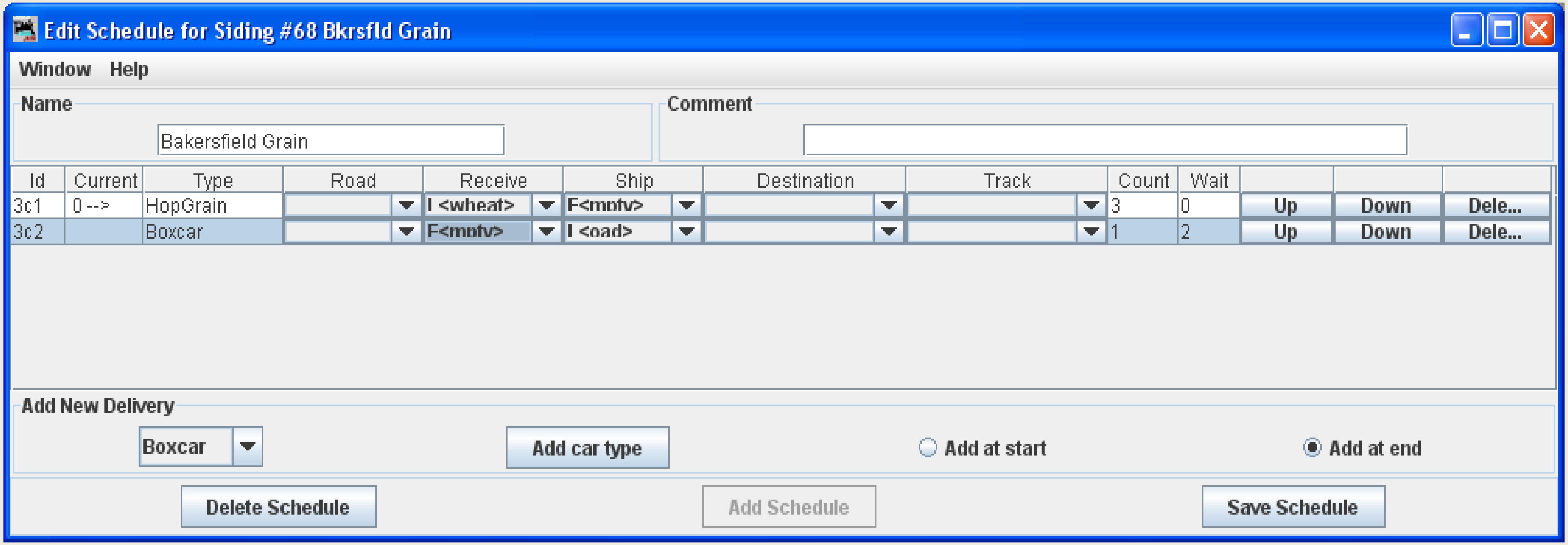
Layout-to-computer connection is not needed.

Parts of JMRI Operations:

- **Settings** – General information about railroad, options, and defaults.
- **Locations** – Places that trains visit to pickup and drop off cars and engines. Includes stubs, yards, interchange track, and staging areas.
- **Cars** – Roster of all cars. Includes number, road, type, length, color and weight.
- **Engines** – Roster of all engines. Includes number, road, model, type and length. Supports consists.
- **Routes** – Each Route is a list of locations a train will visit. Can be point-to-point or out-and-back.
- **Trains** – Defines trains that move cars. Specifies Route, Locations where work is done, and schedule.

Operations – Schedule

- Fine tune how cars arrive/leave a siding



Edit Schedule for Siding #68 Bkrsfld Grain

Name: Bakersfield Grain

Comment:

Id	Current	Type	Road	Receive	Ship	Destination	Track	Count	Wait			
3c1	0 -->	HopGrain		I <wheat>	F<mptv>			3	0	Up	Down	Dele...
3c2		Boxcar		F<mptv>	I <oad>			1	2	Up	Down	Dele...

Add New Delivery: Boxcar

○ Add at start ● Add at end

Operations – Conversion Help

- Importing is possible
- Help for extracting info from other packages
- One user converted his 4500 car system to JMRI from RailOp
- Ops is constantly being improved to support features found in many other Ops programs

Operations Demo

- DIY:
  - Operations->Settings->Tools->Load Demo
- It gives you a couple of everything to start playing with

Automated Running

- Back and Forth Script
- Robot Throttle Script– Ken Cameron
    - Works from the ‘engineer view’
- Dispatcher – Dave Duchamp
- Auto Dispatcher Script - Giorgio Terdina
- Warrants – Pete Cressman
- !! Your detection of trains must be perfect!!

New Things

- MRC is now supported
- Xbee wireless interfaces now supported
- Expanded support for RFID readers
- Revamped decoder support for multiple languages
- Restructured internals to support new generation of decoders (>1K CV’s)
- WOW decoders, sort of working
- ESU decoder support improving but…

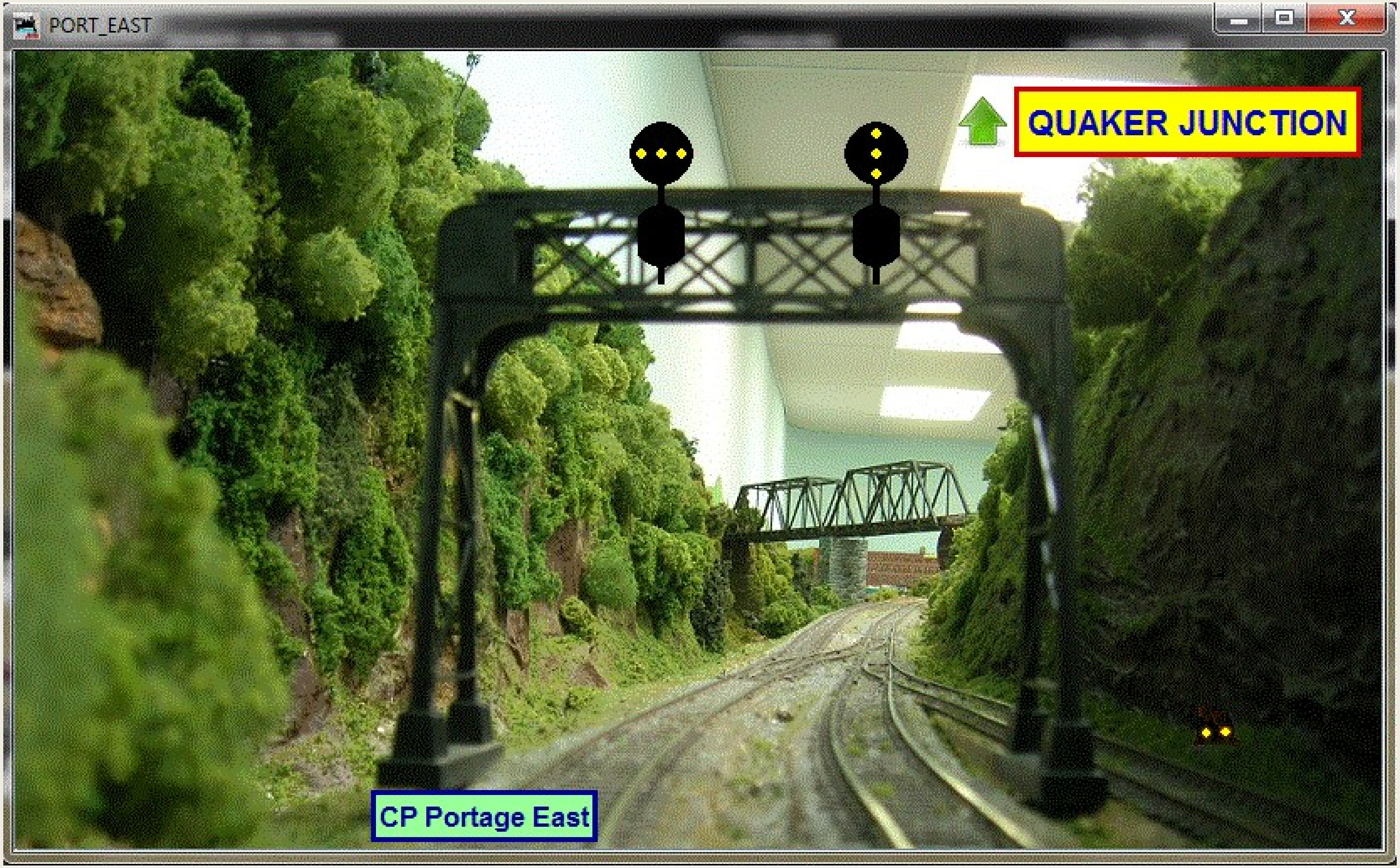
Phones as Throttles

- Requires:
  - phones that do ‘WiFi’
  - WiFi router connected to JMRI computer
- Currently:
  - iPhone WiThrottle
  - Android Engine Driver
- Custom Function Buttons!
- Just in: DHTML, for any WiFi phone/computer

Phones/Tablets as Control Panels

- Requires same support as phones
- Uses modern web browser methods for real-time updates
- Link different panels for easy navigation
- Use instead of physical signals in places operators can’t see
- Bob Bucklew has webpages to help you http://www.quaker-valley.com/CTC/Tablet.html

Phones/Tablets as Control Panels



OpenLCB/LCC

- A layout control network for the next 40 years
- Based on CAN bus, which has been used by the auto industry for years
- Also being designed for other methods like Ethernet and Wireless
- Being developed by a mix of JMRI developers and others to be vendor neutral

OpenLCB/LCC

- Demo is available in the SIG room.
- Clinics are scheduled for:
  Wednesday 2:30 PM – 3:30 PM in Sellwood
  Wednesday 8:30 PM – 11:00 PM in Sellwood
- Overview and Current Status:

  Wednesday 4:00 PM – 5:00 PM in Sellwood
- Users Group:

  Wednesday 7:00 PM – 8:00 PM in Sellwood

JMRI User Group

- Yahoo Users Group
  - jmriusers@yahoogroups.com

JMRI

PORTLAND
DAYLIGHT
EXPRESS
NMRA NATIONAL CONVENTION
2015