

Intro to JMRI and PanelPro's Layout Editor

Dave Duchamp

Dick Bronson (Co-Presenter)

Bob Jacobsen (Co-Presenter)



What is JMRI?

JMRI (Java Model Railroading Interface) is open source (no cost) software for connecting a model railroad layout to a computer, and performing various model railroading tasks via the computer.

JMRI was/is developed by a group of volunteer programmers under the leadership of Bob Jacobsen.

JMRI uses the Java programming language.

JMRI continues to grow . . .



How is JMRI Organized?

JMRI has of an extensive library of model railroading software, and several front-end applications focusing on different areas of model railroading.

All JMRI applications use this common library.

JMRI Applications include:

DecoderPro - Programming DCC decoders.

PanelPro - Layout display for running trains.



What Computer Systems are Supported by JMRI?

Windows – Windows 7, Vista, XP, 2000,
98SE

Macintosh - MacOS X

Linux - several flavors



What Model Railroading Systems are Supported by JMRI?

Loconet - Digitrax (Chief, Empire Builder, Zephyr),
Uhlenbrock - Intellibox

Lenz - LI100, LI100F, LI101, LIUSB

NCE Atlas Commander

C/MRI ZIMO MX-1 Roco

EasyDCC ZTC m-RPS

Wangrow Fleischmann Hornby

SPROG TMCC (Lionel) Protrak Grapevine

XPA Modem Oak Tree Systems **and More...**



What Model Railroading Tasks are Supported?

Programming DCC decoders

Computer Panel Displays (including full CTC Panel)

Computer throttles

Consisting

Control of Turnouts (Including Optional Feedback)

Routes (Controlling groups of Turnouts and/or Sensors)

Logix (Control and Automation Logic)

Control of Layout Lighting

Operations support (Switch Lists)

Control of Signals

and Many More ...



How do I get started?

Detailed instructions for various computers and model railroading systems are on JMRI web site.

<http://jmri.org>

No computer programming is required.

More information on your handout.



Computer Connection Example

Workshop system:

Digitrax DCS100

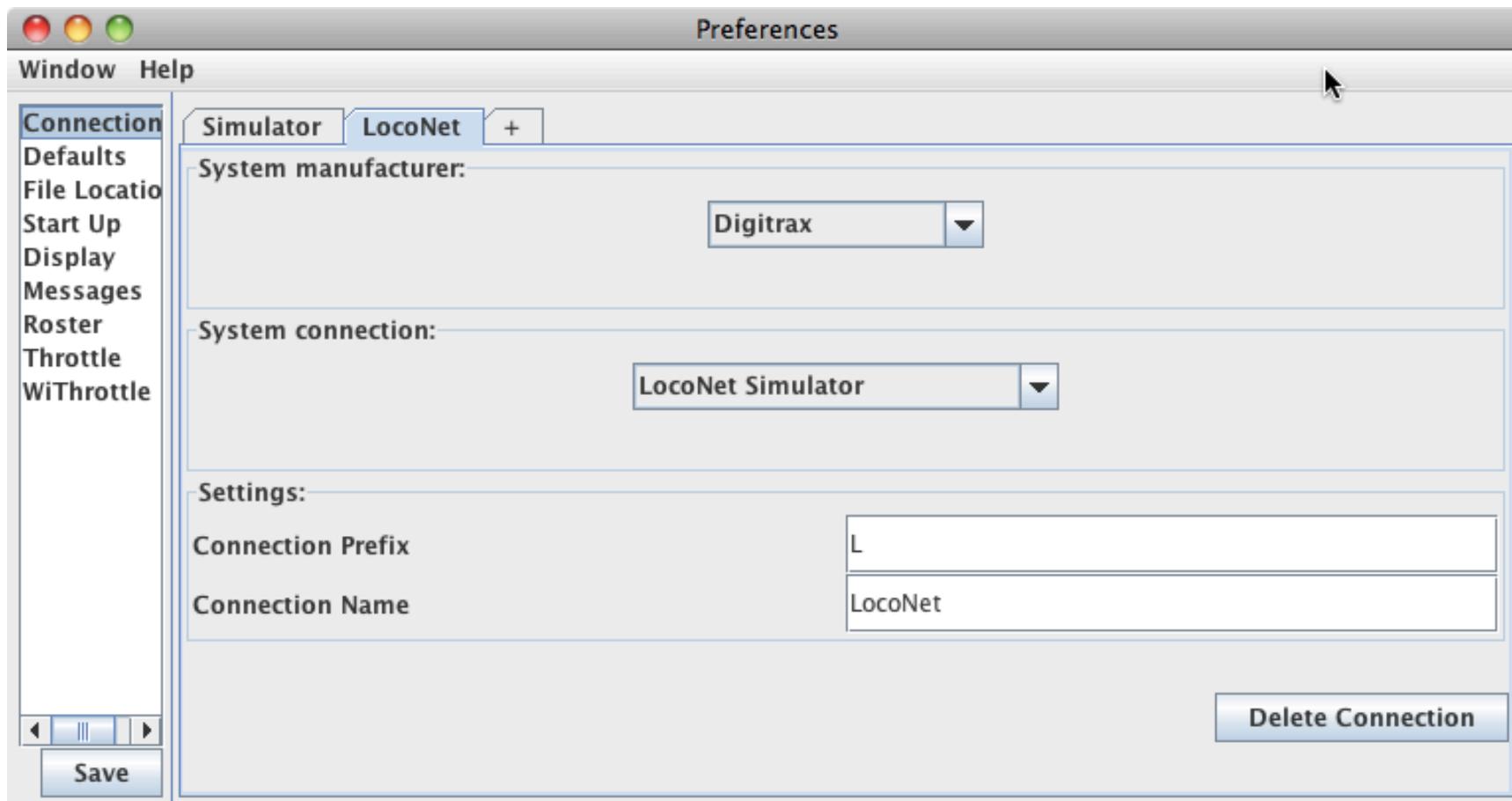
Locobuffer II

Serial to USB adapter

Macintosh MacBook Pro



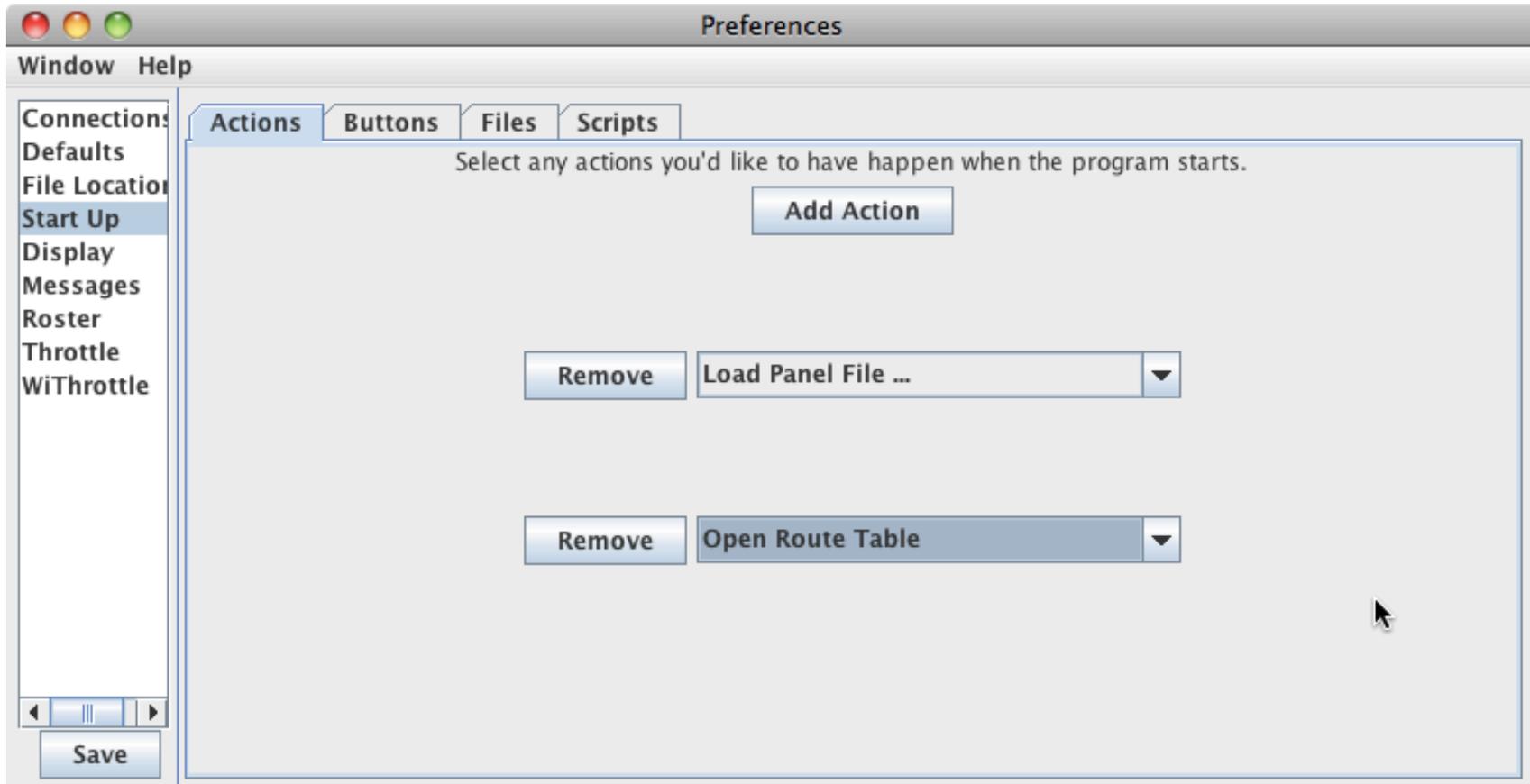
Configuration Panel



New Improved Version



Set Defaults and Start Options

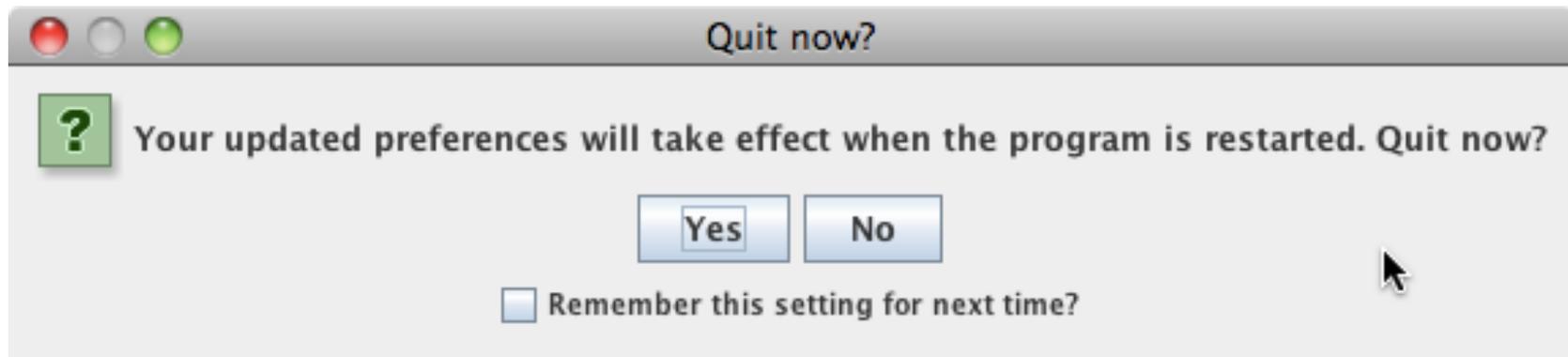




- Select the type of layout connection from an extensive pull-down menu. Multiple connections are supported.
- Select configuration options for your layout connection.
- Set other startup options as desired by bringing up dialogs from the menu on the left.
- Click the “Save” button to write the connection configuration to disk.



Click the “Yes” button, to quit the program.
Restart the JMRI application.



Notes: Restart is required anytime preferences are changed for the preferences to take effect.

Preferences must be set for each JMRI application. They each have separate preferences files.



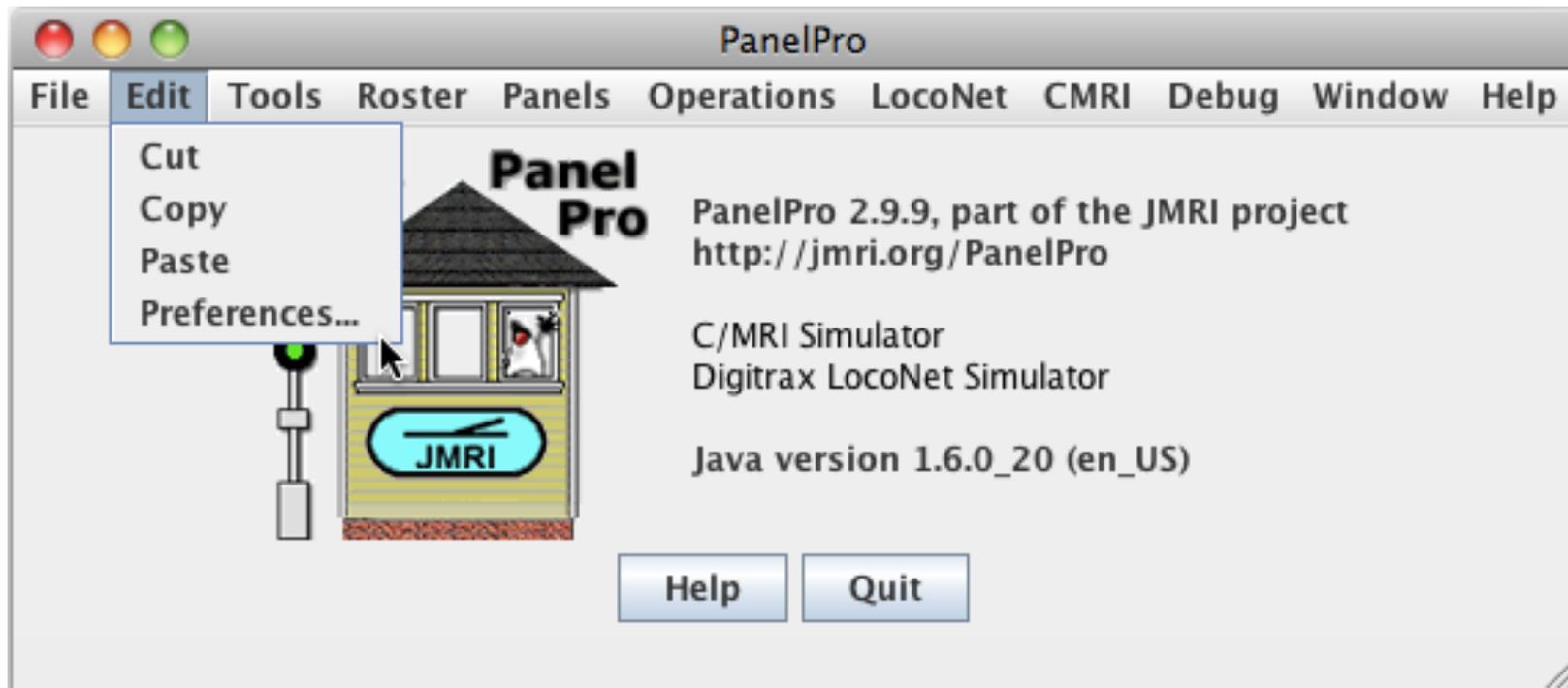
The program is set up according to the saved preferences.



Note: Startup window contains program version and Java version, in addition to connection information.



Configuration preferences may be accessed at any time via the Edit menu.





How do I get help?

1st - Most JMRI windows have a Help menu.

Window Help ... Documentation related to that window

General Help ... Overall JMRI documentation

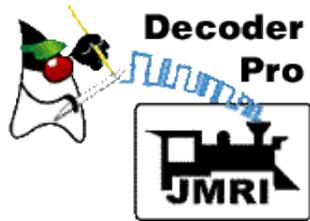
2nd - The JMRI web site - <http://jmri.org/>

Documentation and detailed instructions

3rd - JMRI Yahoo discussion group. **jmriusers**

Monitored by JMRI 'experts', eager to provide help.

Information in your handout on how to sign up.



What is DecoderPro?

DecoderPro is a JMRI application.

DecoderPro is a better tool for programming DCC decoders.

DecoderPro simplifies the job of configuring complicated DCC decoders.

DecoderPro supports mobile decoders (decoders in locomotives).

DecoderPro supports some static decoders.



Basic Terminology

Decoder - small microcomputer based control unit

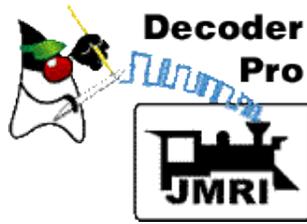
Mobile Decoder - Decoder in a locomotive,
“decodes” DCC commands to control locomotive.

CV (Control Variable) - 8-bit data byte in a
decoder that specifies user options.

Programming a Decoder - setting the values of the
CV’s to user’s options.

Decoders have many CV’s. Many CV’s follow
NMRA Standards, but some are vendor specific.

Each mobile decoder has an **Address** - a number that
allows the locomotive to be uniquely identified.



Setting up an Address

Decoder (locomotive) addresses can be 2 digits or 4 digits on modern decoders and DCC throttles.

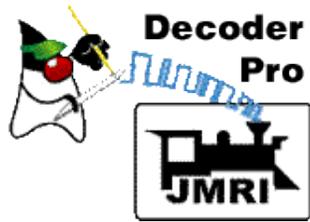
Usually set the address to the locomotive number.

Most decoders are set to address 03 on arrival.

A locomotive will respond to speed control and function commands that bear its address.

Setting the address is usually the first (and sometimes the only) programming needed.

It's easy to set up an address in DecoderPro.

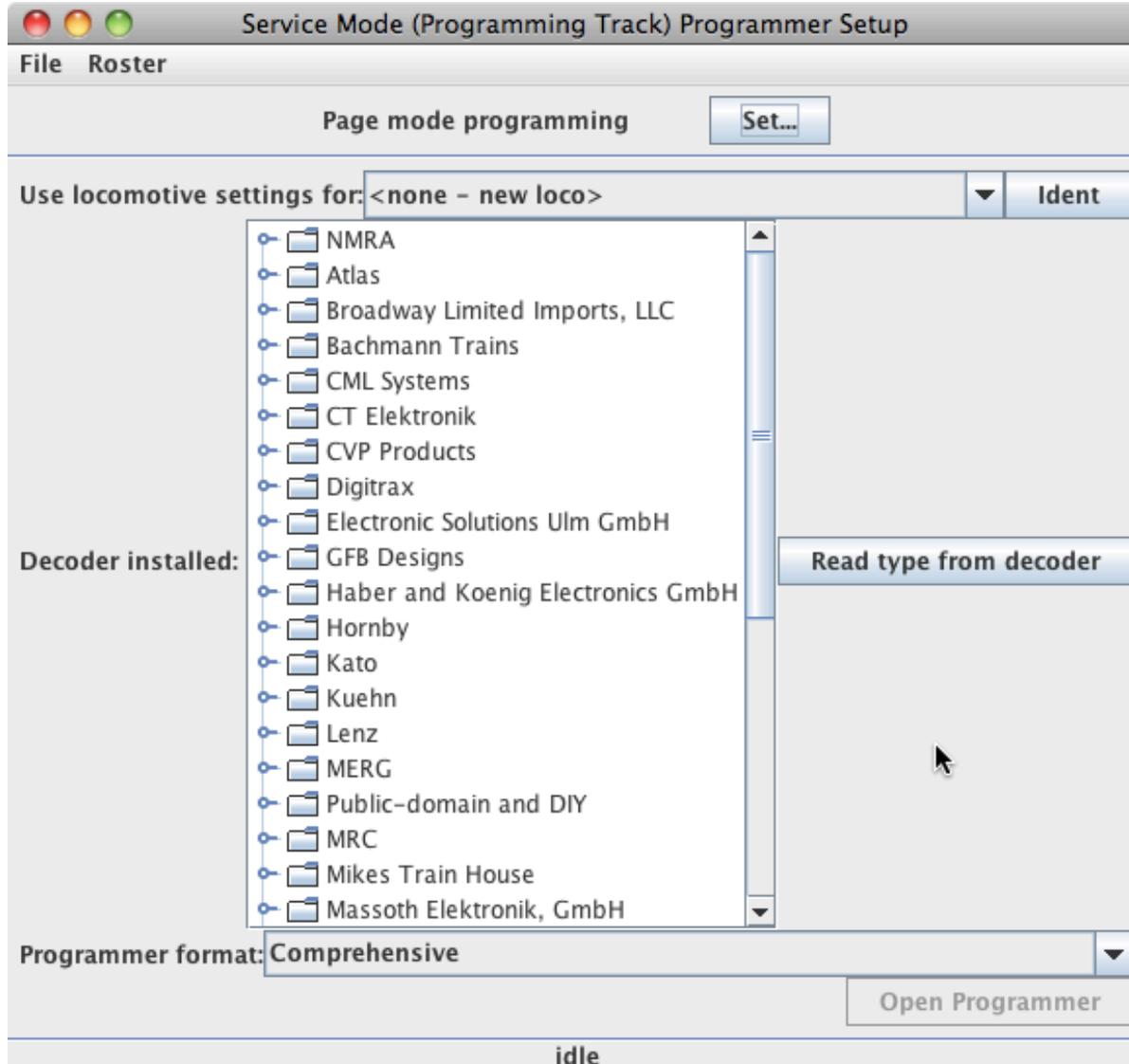


Example - Setting the address of a new decoder

Put the locomotive with the new decoder on the programming track.

Start Decoder Pro. When the window below comes up, click
“**Service Mode (Programming Track) Programmer**”





NMRA standards:

Two CV's identify
a decoder:

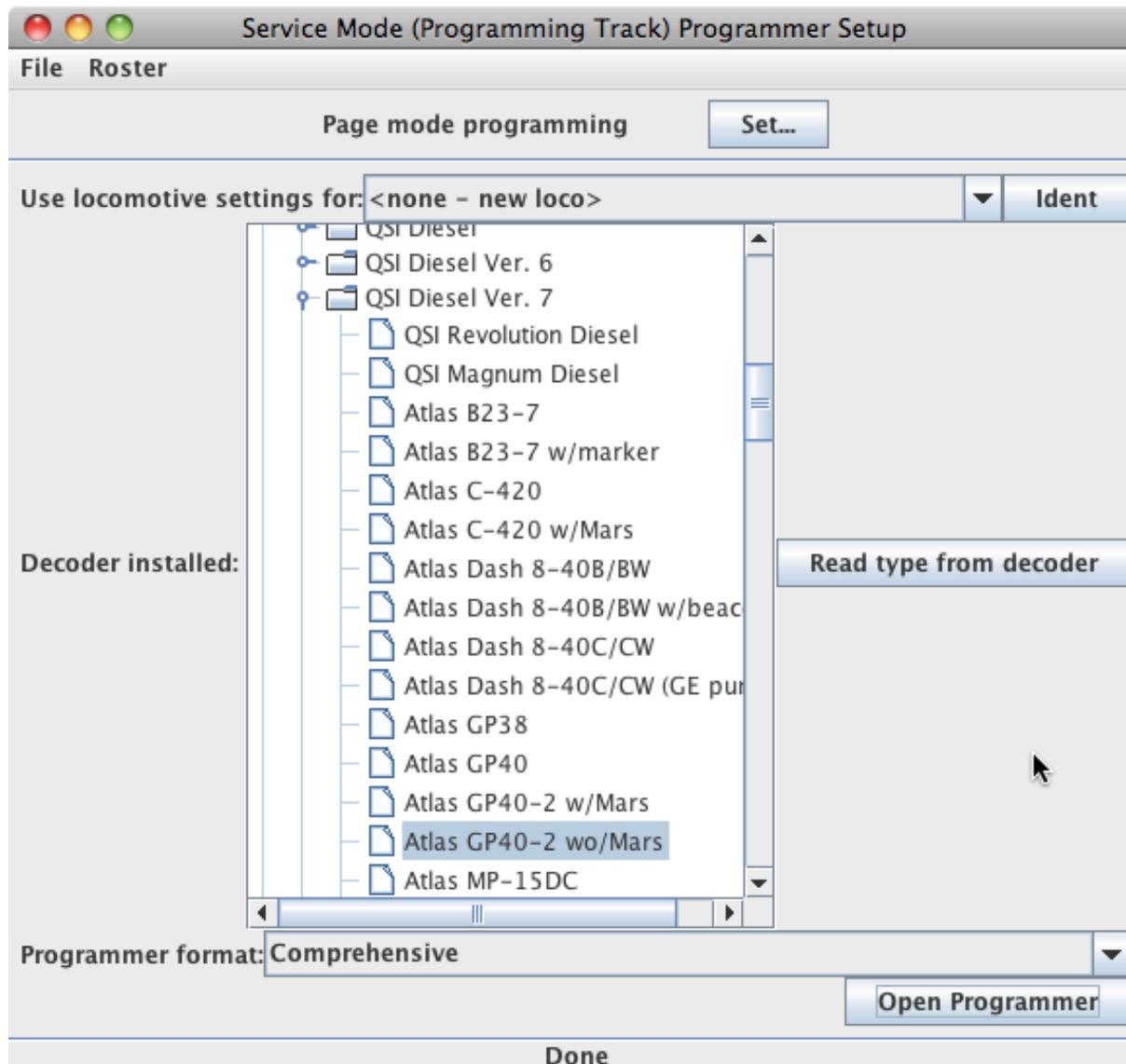
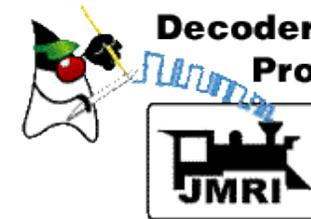
CV8 - Manufacturer ID

CV7 - Manufacturer
Version Number.

Both are **read only**.

<- Click here to have
DecoderPro attempt to
identify the decoder by
reading these CV's.

**Note: Some command
stations cannot read
CV's! For these,
select the decoder
in the list manually.**

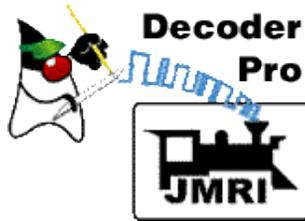


DecoderPro identified the decoder as a QSI Diesel Ver. 7 for an Atlas GP40-2 wo/Mars

(Sometimes the user has to choose among several possibilities.)

Click Atlas GP40-2 wo/Mars, to select it, and click “Open Programmer”.

<-



Fill in Roster information and click “Save to Roster”.

Program <new loco> in Service Mode (Programming Track)

File Reset Window Help

Function Output Light Control Multi Auto Lights BEMF Indexed CVs QSI Misc.
Analog Controls Consist Advanced Sound Sound Levels CVs Sound Control Volume
Roster Entry Basic Motor Basic Speed Control Speed Table Function Map Lights

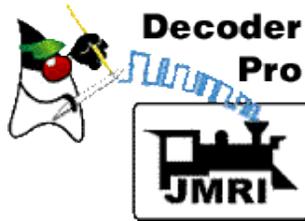
ID: <new loco>
Road Name:
Road Number:
Manufacturer:
Owner:
Model:
DCC Address: [---] [v]
Throttle Speed Limit (%): 100 [▲] [▼]
Comment: [text area]
Decoder Family: QSI Diesel Ver. 7
Decoder Model: Atlas GP40-2 wo/Mars
Decoder Comment: [text area]
Filename:
Date Modified:

Save to Roster Reset to defaults

Read changes on all sheets Write changes on all sheets Read all sheets Write all sheets

Direct byte mode programming Set...

idle



Click the Basic tab.

Program <new loco> in Service Mode (Programming Track)

File Reset Window Help

Function Output Light Control Multi Auto Lights BEMF Indexed CVs QSI Misc.
Analog Controls Consist Advanced Sound Sound Levels CVs Sound Control Volume
Roster Entry Basic Motor Basic Speed Control Speed Table Function Map Lights

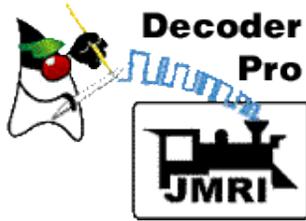
ID: GT6419
Road Name: GT 6419
Road Number: 6419
Manufacturer: Atlas Gold Line
Owner: Dave Duchamp
Model: GP40-2
DCC Address: 6419 Long
Throttle Speed Limit (%): 100
Comment: Came with decoder installed.
Decoder Family: QSI Diesel Ver. 7
Decoder Model: Atlas GP40-2 wo/Mars
Decoder Comment:
Filename:
Date Modified: Jul 8, 2010 10:06:32 AM

Save to Roster Reset to defaults

Read changes on all sheets Write changes on all sheets Read all sheets Write all sheets

Direct byte mode programming Set...

Roster file GT6419.xml saved OK



Click “Read full sheet”. Yellow items are replaced with values read from the decoder.

Program <new loco> in Service Mode (Programming Track)

File Reset Window Help

Function Output Light Control Multi Auto Lights BEMF Indexed CVs QSI Misc.
Analog Controls Consist Advanced Sound Sound Levels CVs Sound Control Volume
Roster Entry Basic Motor Basic Speed Control Speed Table Function Map Lights

One byte (short) address
 Two byte (extended) address

Active DCC Address: 3

Primary Address 3
Extended Address 0
Address Format One byte (short) address

Locomotive Direction normal
FL Location 28/128 speed step format
Power Source Conversion DC conversion enabled

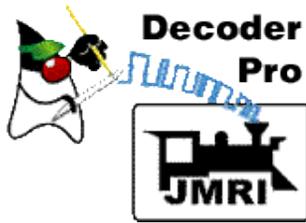
Manufacturer ID 113
Manufacturer Version No 0
Product Model 0

Read changes on sheet Write changes on sheet Read full sheet Write full sheet

Read changes on all sheets Write changes on all sheets Read all sheets Write all sheets

Direct byte mode programming Set...

Roster file GT_8419.xml saved OK



Switch off analog, and set new two-byte address.
Click “Write changes on sheet” to send to loco.

Program <new loco> in Service Mode (Programming Track)

File Reset Window Help

Function Output Light Control Multi Auto Lights BEMF Indexed CVs QSI Misc.
Analog Controls Consist Advanced Sound Sound Levels CVs Sound Control Volume
Roster Entry Basic Motor Basic Speed Control Speed Table Function Map Lights

One byte (short) address
 Two byte (extended) address

Active DCC Address:
6419

Primary Address 3
Extended Address 6419
Address Format Two byte (extended) address

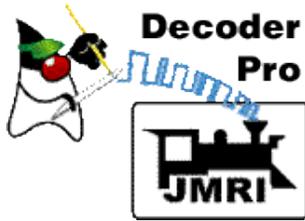
Locomotive Direction normal
FL Location 28/128 speed step format
Power Source Conversion NMRA Digital only

Manufacturer ID 113
Manufacturer Version No 7
Product Model 174

Read changes on sheet Write changes on sheet Read full sheet Write full sheet
Read changes on all sheets Write changes on all sheets Read all sheets Write all sheets

Direct byte mode programming Set...

OK



Return to Roster Entry and “Save to Roster”
to update Roster on disk. **All done!**

Program <new loco> in Service Mode (Programming Track)

File Reset Window Help

Function Output Light Control Multi Auto Lights BEMF Indexed CVs QSI Misc.
Analog Controls Consist Advanced Sound Sound Levels CVs Sound Control Volume
Roster Entry Basic Motor Basic Speed Control Speed Table Function Map Lights

ID: GT6419
Road Name: GT 6419
Road Number: 6419
Manufacturer: Atlas Gold Line
Owner: Dave Duchamp
Model: GP40-2
DCC Address: 6419 Long
Throttle Speed Limit (%): 100
Comment: Came with decoder installed.
Decoder Family: QSI Diesel Ver. 7
Decoder Model: Atlas GP40-2 wo/Mars
Decoder Comment:
Filename: Jul 8, 2010 9:23:46 AM

Save to Roster Reset to defaults

Read changes on all sheets Write changes on all sheets Read all sheets Write all sheets

Direct byte mode programming Set...

OK



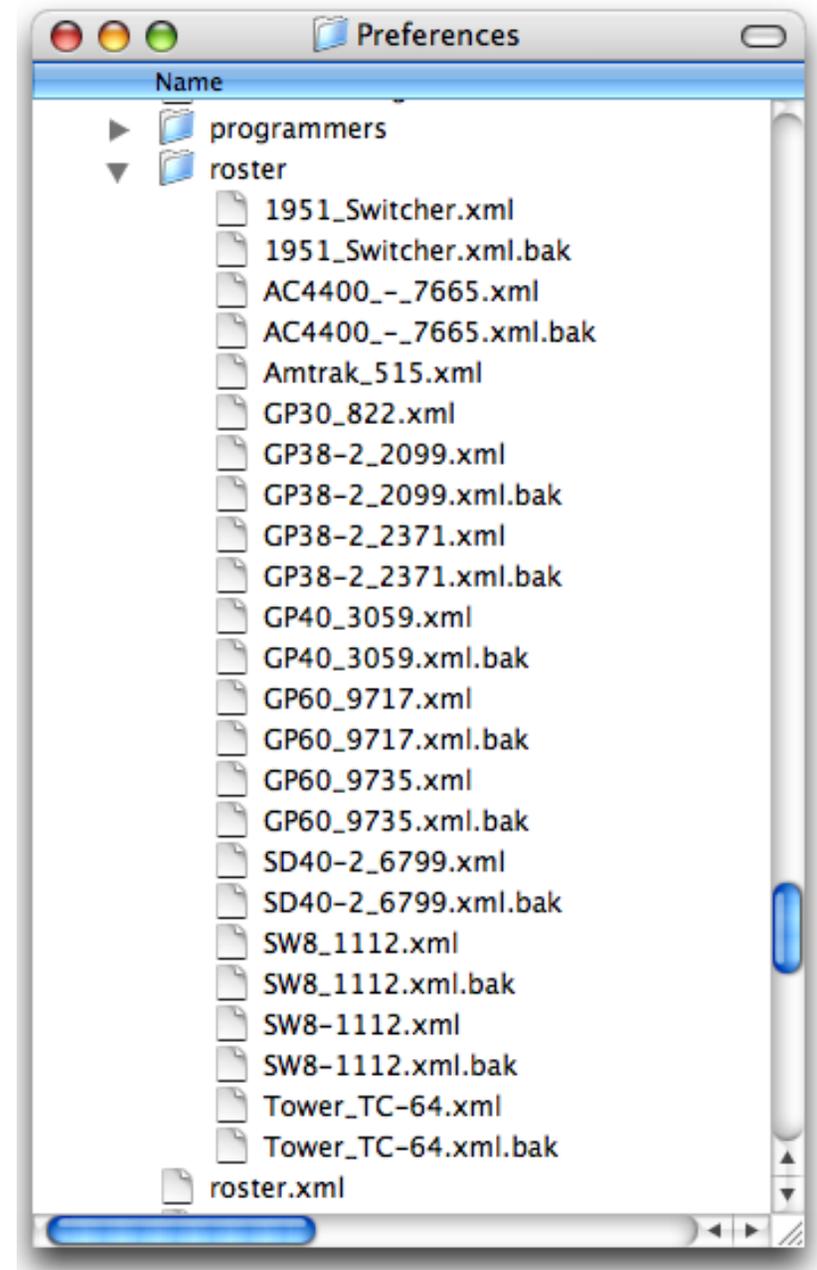
What are Roster Files?

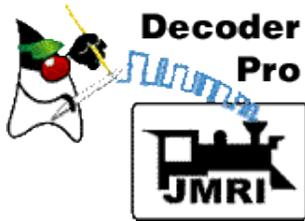
DecoderPro stores the final information for each decoder in a **Roster File**.

These Roster Files are used to construct a Roster menu for JMRI applications.

A Roster file allows easy reprogramming if decoder needs to be reset.

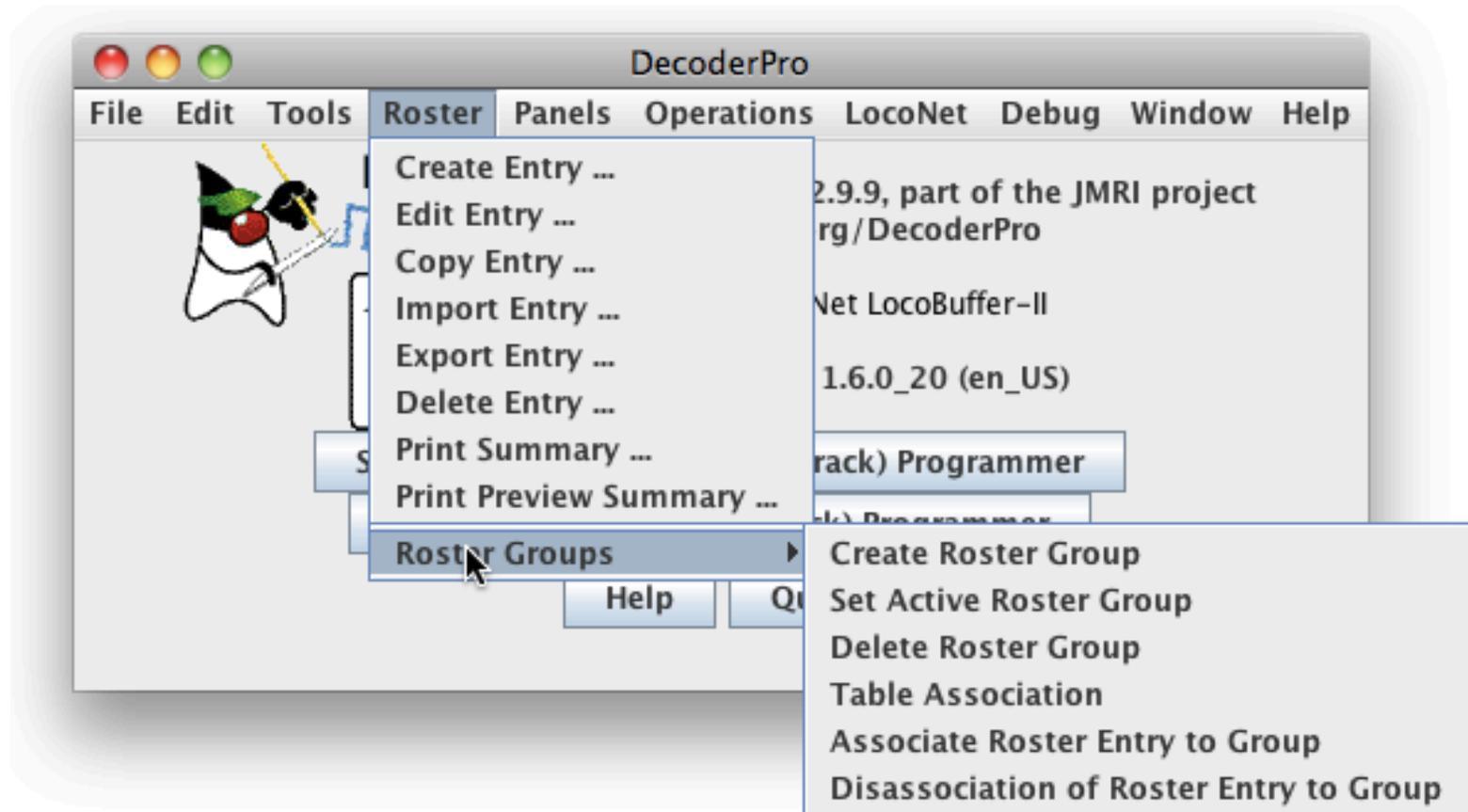
The Roster menu allows easy selection of a loco in JMRI tools--decoder programmer, throttle, consist, etc.

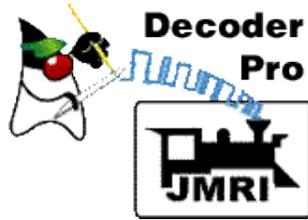




Roster Menu

New – Roster Groups





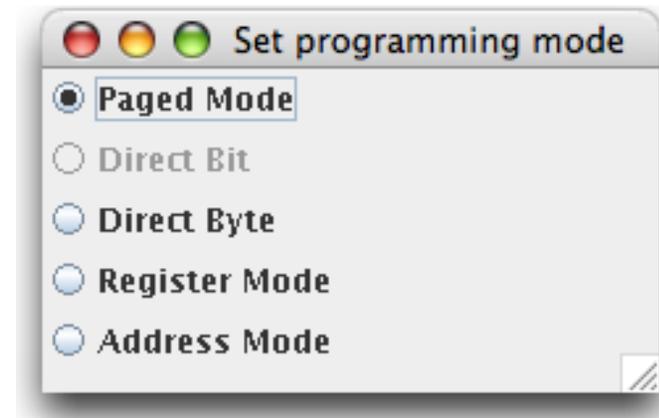
Miscellaneous Info and Tips

Support for new decoders is continuously added to DecoderPro.

DecoderPro works through the command station, so it's usually limited to what you can do with your throttle. Think of DecoderPro as a smart throttle.

DecoderPro supports other modes of programming. Access these other modes using the “Set...” button to get the dialog shown at the right.

Some decoders need a different mode for programming.



Some new sound decoders need a programming track booster to communicate with some command stations.



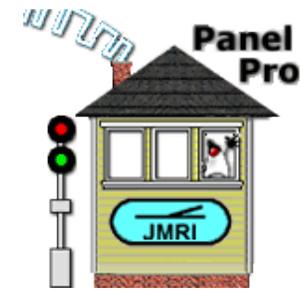
Sound Decoder Demo

DecoderPro Animated Demos:

Peter Ulvestad (Edmonton Model Railroad Association)

<http://www3.telus.net/public/ulvestad/DecoderProDemos.html>





What is Layout Editor?

- An alternative to the traditional Panel Editor

Differences from Panel Editor

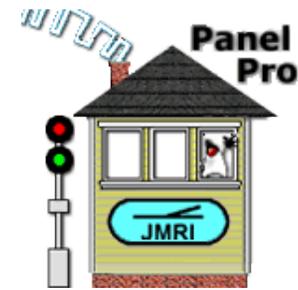
- Uses a drawn track diagram instead of icons for track
- Captures full connectivity automatically
- Supports new animation features and tools

Similarities to Panel Editor

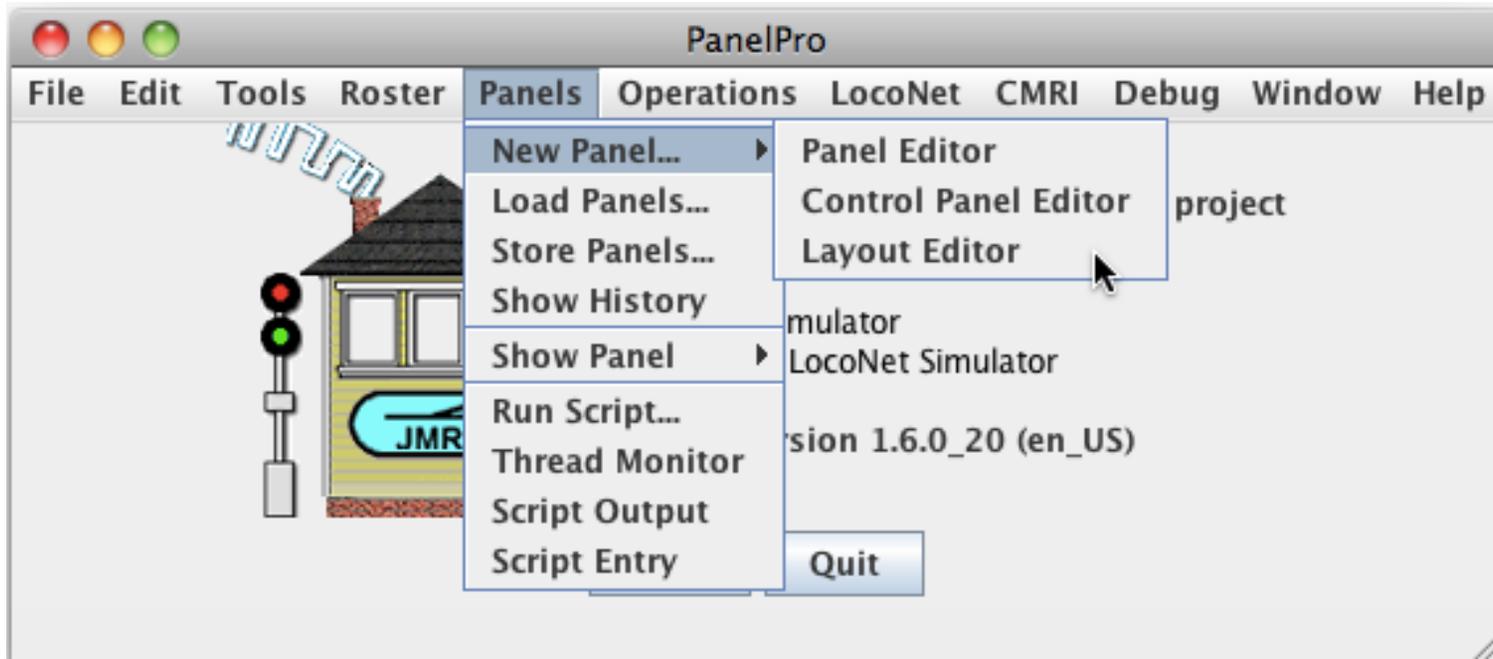
- Uses the same JMRI configuration items and tools
- Uses the same icons for panel items other than the schematic track diagram.

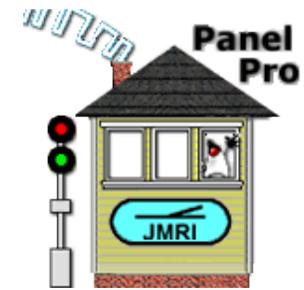


Simple Oval Tutorial



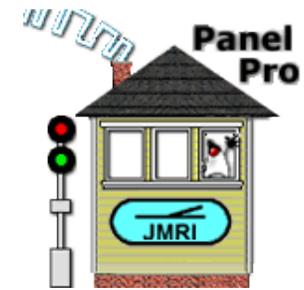
We start by selecting “New Panel>Layout Editor” in the Panels Menu





After resizing we have the Layout Editor window.

To add an item, check item type, enter needed data, then, with shift down, click on panel - except Track Segment.
To add a Track Segment, with shift down press mouse on one connection point and drag to another connection point.
To move an item, drag it with the command key pressed. To show its popup menu, control-click on it.



Shift-Click to add an RH turnout, and set up to add an LH turnout.

My Layout

File Options Tools Zoom Marker Window Help

Location - x: 524 y: 185 Turnout: Name Type RH LH WYE Double Xover RH Xover LH Xover Rotation

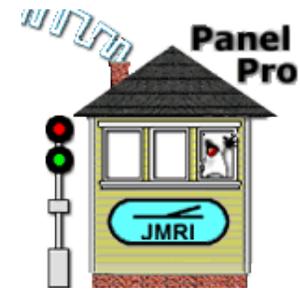
Block: Name Occupancy Sensor Track: Level Crossing Track Segment Dashed Mainline

Track Nodes: End Bumper Anchor Point Labels: Text Label Memory Label

Multi-sensor... Sensor Icon Signal Icon Icon Label



To add an item, check item type, enter needed data, then, with shift down, click on panel - except Track Segment
To add a Track Segment, with shift down press mouse on one connection point and drag to another connection point
To move an item, drag it with the command key pressed. To show its popup menu, control-click on it.



Shift-Click to add an LH turnout assigned to LT31. Note popup menu.

The screenshot shows the JMRI software interface with a configuration window for a turnout. The window title is "My Layout". The menu bar includes "File", "Options", "Tools", "Zoom", "Marker", "Window", and "Help".

Configuration fields include:

- Location - x: 679 y: 58
- Turnout: Name:
- Type: RH LH WYE Double Xover RH Xover LH Xover
- Rotation:
- Block: Name:
- Occupancy Sensor:
- Track: Level Crossing Track Segment Dashed Mainline
- Track Nodes: End Bumper Anchor Point
- Labels: Text Label: Memory Label:
- Multi-sensor... Sensor Icon: Signal Head Icon: Icon Label

A popup menu is visible over the turnout icon in the main workspace. The menu items are:

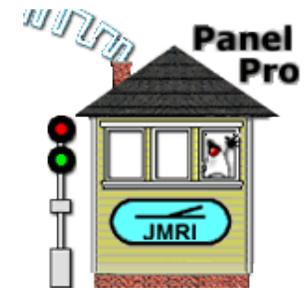
- Left-Hand Turnout
- Turnout: LT31
- Rotate...
- Disabled
- Disable When Occupied
- No Block Set
- Use Size As Default
- Edit...
- Remove
- Set Signals...

At the bottom of the window, there is instructional text:

To add an item, check item type, enter needed data, then, click on the icon in the main workspace.

To add a Track Segment, with shift down press mouse on one connection point and drag to another connection point.

To move an item, drag it with the command key pressed. To show its popup menu, control-click on it.



Added another turnout, LT32, for an industrial siding.

My Layout

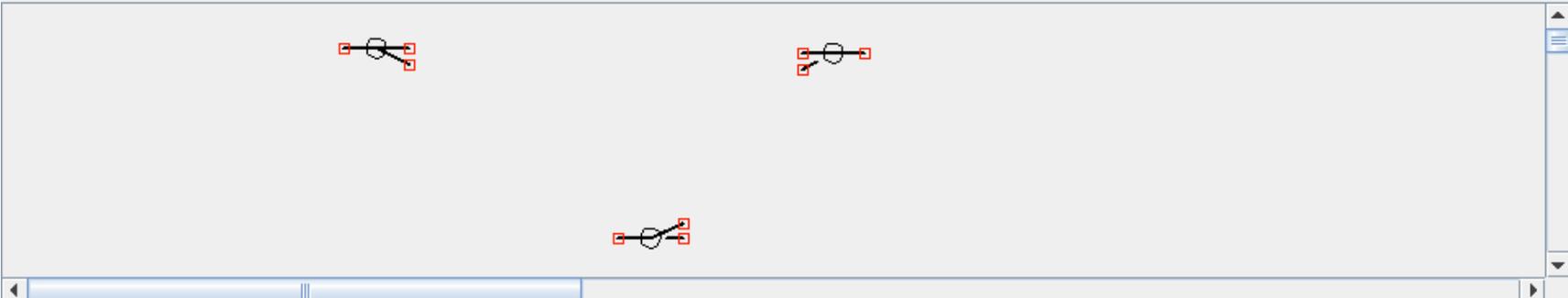
File Options Tools Zoom Marker Window Help

Location - x: 589 y: 159 Turnout: Name Type RH LH WYE Double Xover RH Xover LH Xover Rotation

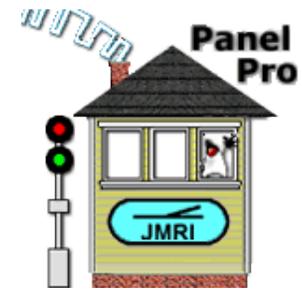
Block: Name Occupancy Sensor Track: Level Crossing Track Segment Dashed Mainline

Track Nodes: End Bumper Anchor Point Labels: Text Label Memory Label

Multi-sensor... Sensor Icon Signal Icon Icon Label



To add an item, check item type, enter needed data, then, with shift down, click on panel - except Track Segment
To add a Track Segment, with shift down press mouse on one connection point and drag to another connection point
To move an item, drag it with the command key pressed. To show its popup menu, control-click on it.



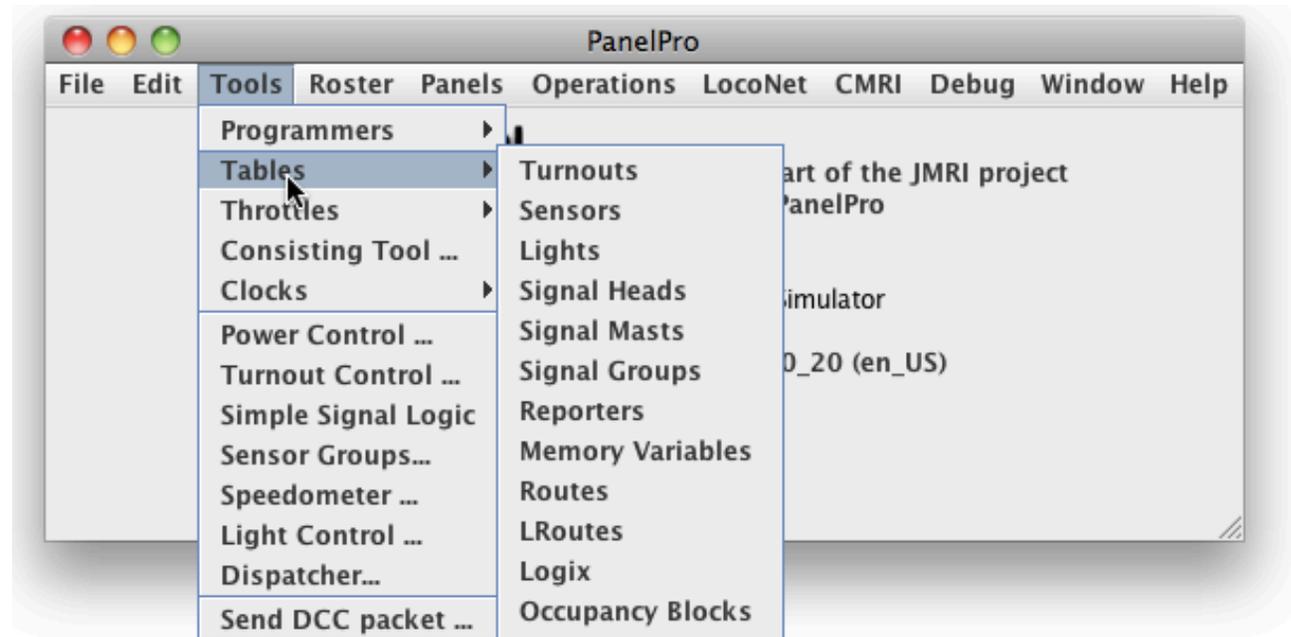
Previously entered
items in tables:

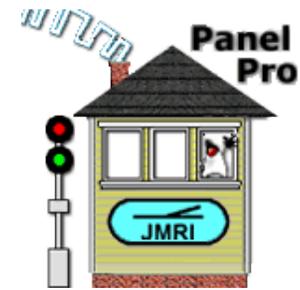
Turnouts

Sensors

Signals

Memory Variables





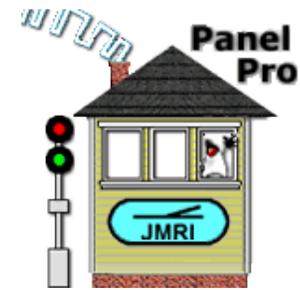
Pre-entered Turnout Table

With three track switches:

LT30, LT31, and LT32

Turnout Table				
File Window Help Automation				
System	User Name	Cmd	Comment	
LT1	Green IH1 (left throat 1)	Closed		Delete
LT2	Yellow IH1 (left throat 1)	Closed		Delete
LT3	Red IH1 (left throat 1)	Thrown		Delete
LT4	Green IH3 (left diverging)	Thrown		Delete
LT5	Red IH3 (left diverging)	Thrown		Delete
LT6	Green IH5 (left throat 2)	Closed		Delete
LT7	Red IH5 (left throat 2)	Thrown		Delete
LT10	Green IH2 (left continuing)	Closed		Delete
LT11	Yellow IH2 (left continuing)	Closed		Delete
LT12	Red IH2 (left continuing)	Thrown		Delete
LT30	left end	Thrown		Delete
LT31	right end	Closed		Delete
LT32	industry	Thrown		Delete

Show feedback information
 Show lock information
 Automatic re



Zoom in to the top two turnouts before connecting them.

The screenshot shows the JMRI software interface with the 'Zoom' menu open. The menu options are:

- No Zoom
- x 1.5
- x 2.0
- x 3.0
- x 4.0

The main window displays a layout editor with three turnout icons. The 'Zoom' menu is currently set to 'x 2.0'.

File Options Tools Zoom Marker Window Help

Location - x: 250 y: 250

Block: Name: []

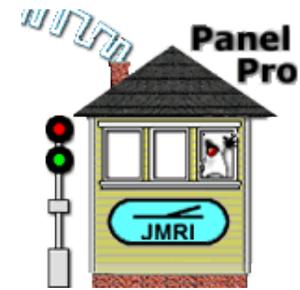
Turnout: Name: LT32 Type: RH LH WYE Double Xover RH Xover LH Xover Rotation: []

Occupancy Sensor: [] Track: Level Crossing Track Segment Dashed Mainline

Bumper: Anchor Point Labels: Text Label: [] Memory Label: []

Multi-sensor... Sensor Icon: [] Signal Icon: [] Icon Label: []

To add an item, check item type, enter needed data, then, with shift down, click on panel - except Track Segment
To add a Track Segment, with shift down press mouse on one connection point and drag to another connection point
To move an item, drag it with the command key pressed. To show its popup menu, control-click on it



Link together the top two turnouts with **Track Segments**.

My Layout

File Options Tools Zoom Marker Window Help

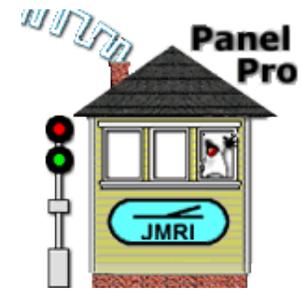
Location - x: 459 y: 30 Turnout: Name Type RH LH WYE Double Xover RH Xover LH Xover Rotation

Block: Name Occupancy Sensor Track: Level Crossing Track Segment Dashed Mainline

Track Nodes: End Bumper Anchor Point Labels: Text Label Memory Label

Multi-sensor... Sensor Icon Signal Icon Icon Label

To add an item, check item type, enter needed data, then, with shift down, click on panel - except Track Segment
To add a Track Segment, with shift down press mouse on one connection point and drag to another connection point.
To move an item, drag it with the command key pressed. To show its popup menu, control-click on it.



The turnouts are connected with **Track Segments**, but need alignment.

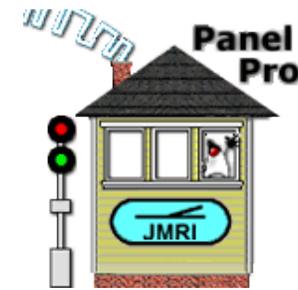
Location - x: 263 y: 69 Turnout: Name Type RH LH WYE Double Xover RH Xover LH Xover Rotation

Block: Name Occupancy Sensor Track: Level Crossing Track Segment Dashed Mainline

Track Nodes: End Bumper Anchor Point Labels: Text Label Memory Label

Multi-sensor... Sensor Icon Signal Icon Icon Label

To add an item, check item type, enter needed data, then, with shift down, click on panel - except Track Segment
To add a Track Segment, with shift down press mouse on one connection point and drag to another connection point
To move an item, drag it with the command key pressed. To show its popup menu, control-click on it.



Aligned! Need to add **Anchor Points** to complete our oval.

My Layout

File Options Tools Zoom Marker Window Help

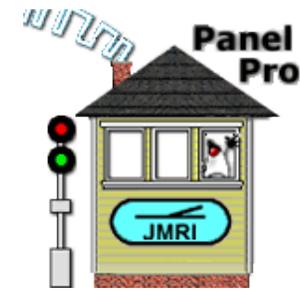
Location - x: 322 y: 80 Turnout: Name Type RH LH WYE Double Xover RH Xover LH Xover Rotation

Block: Name Occupancy Sensor Track: Level Crossing Track Segment Dashed Mainline

Track Nodes: End Bumper Anchor Point Labels: Text Label Memory Label

Multi-sensor... Sensor Icon Signal Icon Icon Label

To add an item, check item type, enter needed data, then, with shift down, click on panel - except Track Segment.
To add a Track Segment, with shift down press mouse on one connection point and drag to another connection point.
To move an item, drag it with the command key pressed. To show its popup menu, control-click on it.



Need to connect the **Anchor Points** to complete our oval.

My Layout

File Options Tools Zoom Marker Window Help

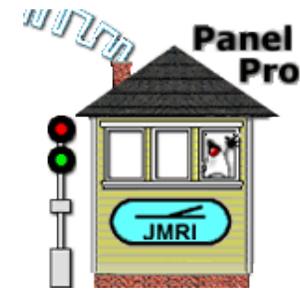
Location - x: 334 y: 152 Turnout: Name Type RH LH WYE Double Xover RH Xover LH Xover Rotation

Block: Name Occupancy Sensor Track: Level Crossing Track Segment Dashed Mainline

Track Nodes: End Bumper Anchor Point Labels: Text Label Memory Label

Multi-sensor... Sensor Icon Signal Icon Icon Label

To add an item, check item type, enter needed data, then, with shift down, click on panel - except Track Segment
To add a Track Segment, with shift down press mouse on one connection point and drag to another connection point
To move an item, drag it with the command key pressed. To show its popup menu, control-click on it.



Need to add industrial siding track - add an “End Bumper”.

My Layout

File Options Tools Zoom Marker Window Help

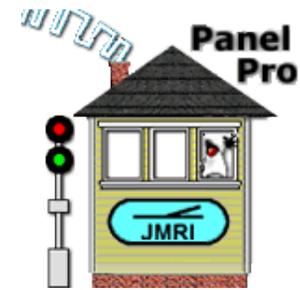
Location - x: 179 y: 99 Turnout: Name Type RH LH WYE Double Xover RH Xover LH Xover Rotation

Block Name Occupancy Sensor Track: Level Crossing Track Segment Dashed Mainline

Track Nodes: End Bumper Anchor Point Labels: Text Label Memory Label

Multi-sensor... Sensor Icon Signal Icon Icon Label

To add an item, check item type, enter needed data, then, with shift down, click on panel - except Track Segment.
To add a Track Segment, with shift down press mouse on one connection point and drag to another connection point.
To move an item, drag it with the command key pressed. To show its popup menu, control-click on it.



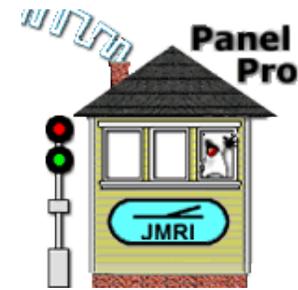
Add Track Segment to connect turnout to the “End Bumper”.

The screenshot shows the 'My Layout' window in the JMRI software. The window title is 'My Layout'. The menu bar includes 'File', 'Options', 'Tools', 'Zoom', 'Marker', 'Window', and 'Help'. The main configuration area has the following options:

- Location - x: 547 y: 144
- Turnout: Name [] Type RH LH WYE Double Xover RH Xover LH Xover Rotation []
- Block: Name [] Occupancy Sensor [] Track: Level Crossing Track Segment Dashed Mainline
- Track Nodes: End Bumper Anchor Point
- Labels: Text Label [] Memory Label []
- Multi-sensor... Sensor Icon [] Signal Icon [] Icon Label []

The central area displays a track diagram with a rectangular layout. A mouse cursor is positioned over a connection point on the bottom track. At the bottom of the window, there is instructional text:

To add an item, check item type, enter needed data, then, with shift down, click on panel - except Track Segment
To add a Track Segment, with shift down press mouse on one connection point and drag to another connection point
To move an item, drag it with the command key pressed. To show its popup menu, control-click on it.



Assign a physical turnout to the upper left turnout drawing.

My Layout

File Options Tools Zoom Marker Window Help

Location - x: 228 y: 41 Turnout: Name Type RH LH WYE Double Xover RH Xover LH Xover Rotation

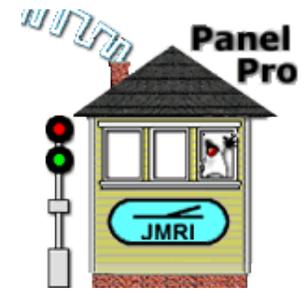
Block: Name Occupancy Sensor Track: Level Crossing Track Segment Dashed Mainline

Track Nodes: End Bumper Anchor Point Labels: Text Label Memory Label

Multi-sensor... Sensor Icon Signal Head Icon Icon Label

Right-Hand Turnout
No Turnout Set
 Disabled
 Disable When Occupied
No Block Set
Use Size As Default
Edit...
Remove

To add an item, press the type of item needed data, then, with shift down, click on panel - except Track Segment.
To add a Track Segment, with shift down press mouse on one connection point and drag to another connection point.
To move an item, drag it with the command key pressed. To show its popup menu, control-click on it.



Enter the name of the physical turnout, and click Done.

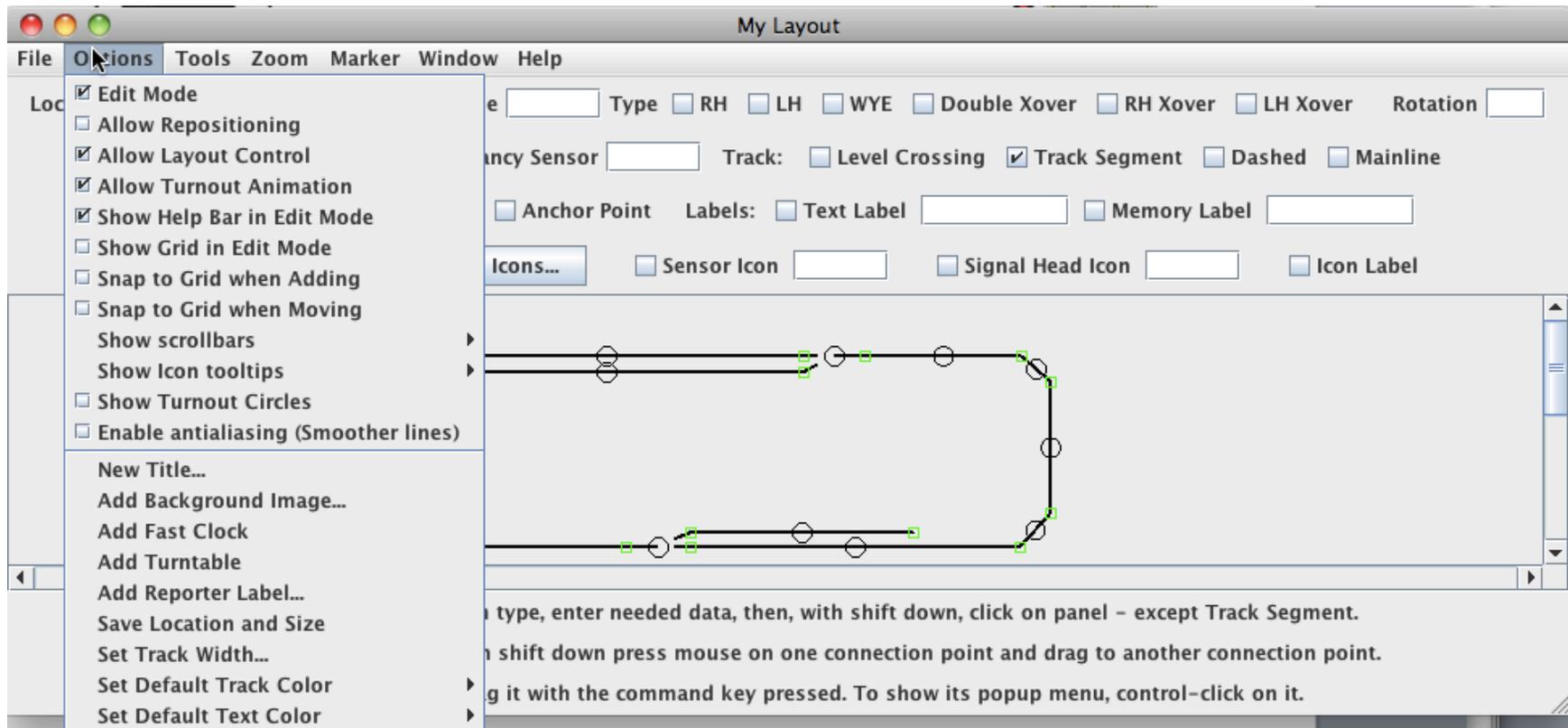
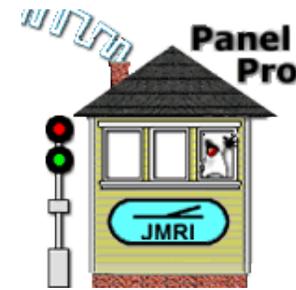
The screenshot shows a standard Mac OS-style dialog box titled 'Edit Turnout'. It has a grey title bar with three window control buttons (red, yellow, green) on the left. Below the title bar is a menu bar with 'Window' and 'Help' options. The main area contains three input fields: 'Turnout Name' with the text 'LT30', 'Continuing Route Turnout State' with a dropdown menu set to 'Closed', and 'Block: Name' which is currently empty. At the bottom of the dialog are three buttons: 'Create/Edit Block', 'Done', and 'Cancel'. A mouse cursor is pointing at the 'Done' button.

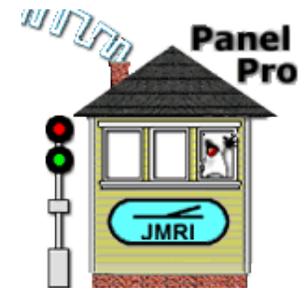


We don't need the Help Bar at the bottom any more.

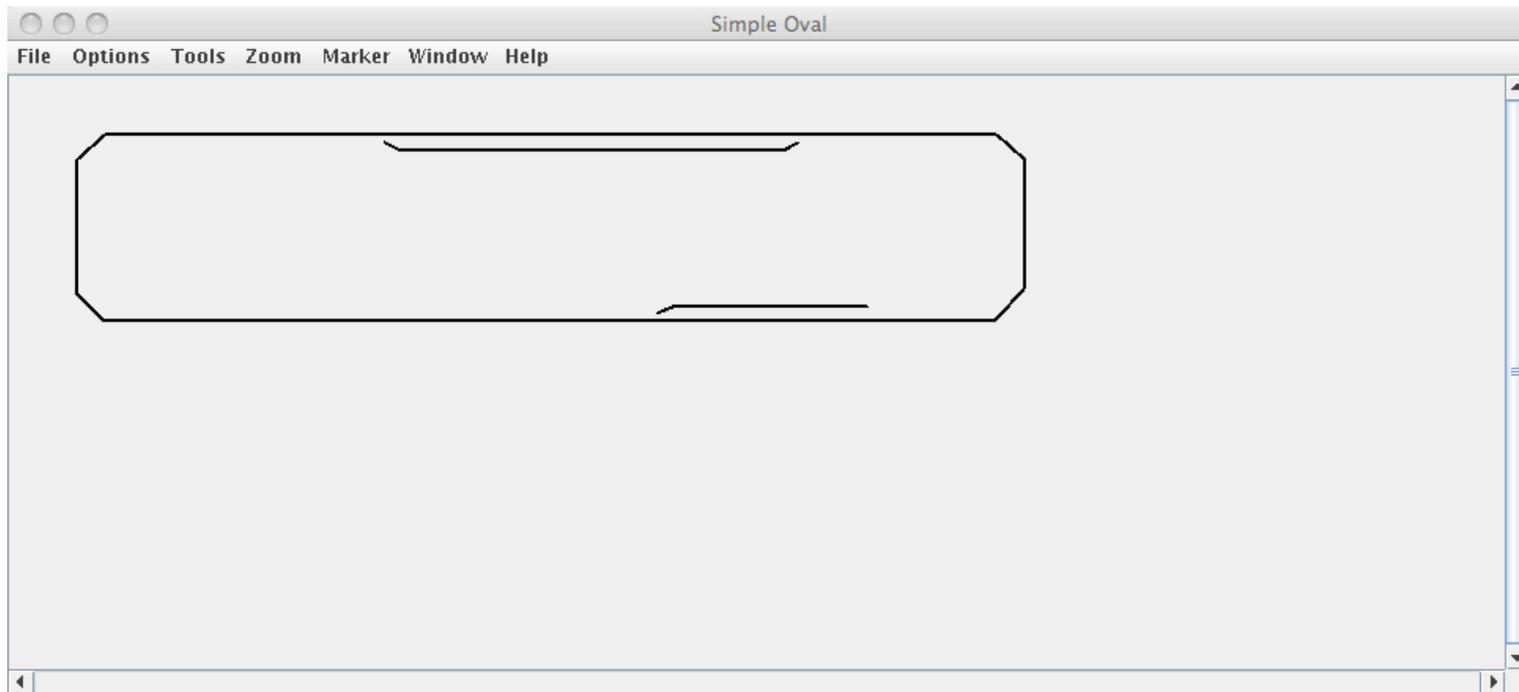
Change the title to "Simple Oval".

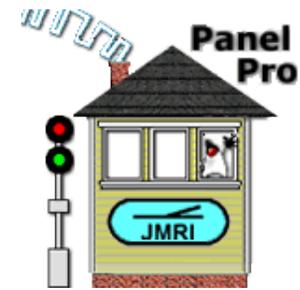
And turn off Edit Mode to see our simple oval layout.



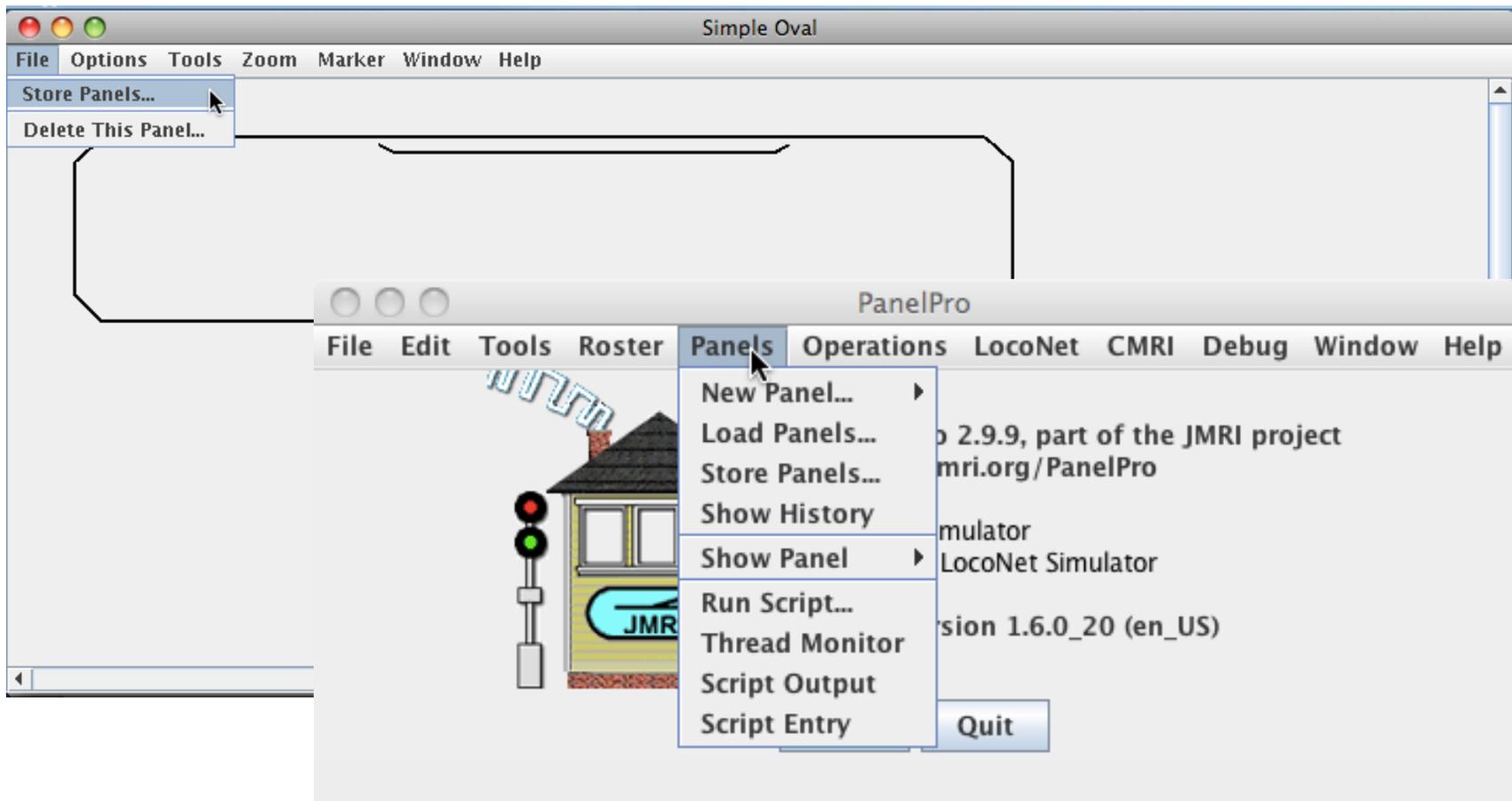


A schematic of the simple oval layout.



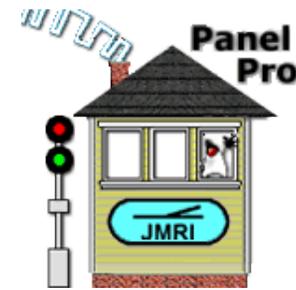


Select “Store panels...” to save panel information to disk.

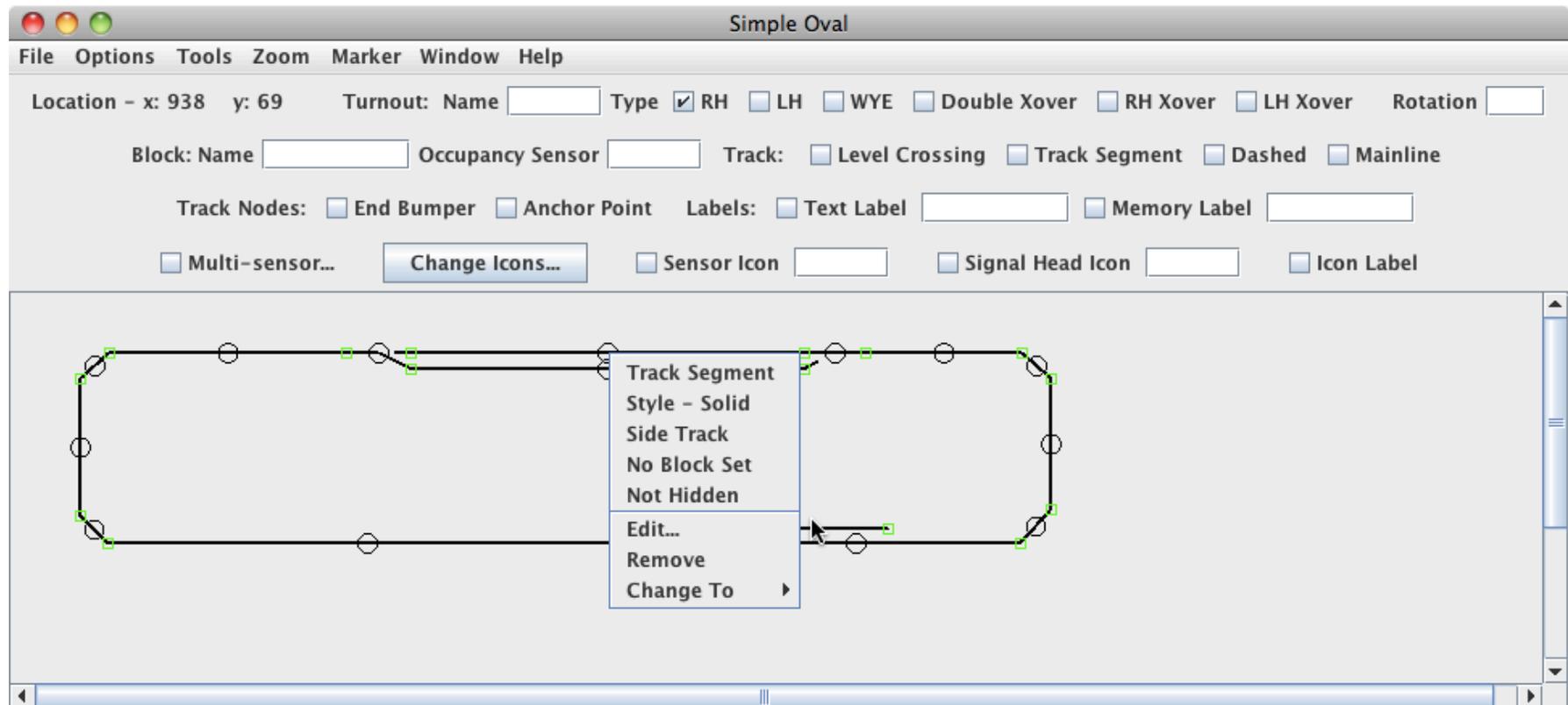


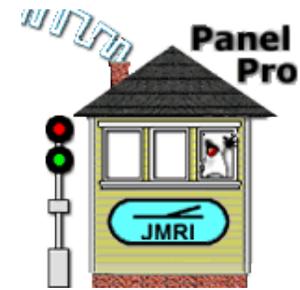


Panel Animation

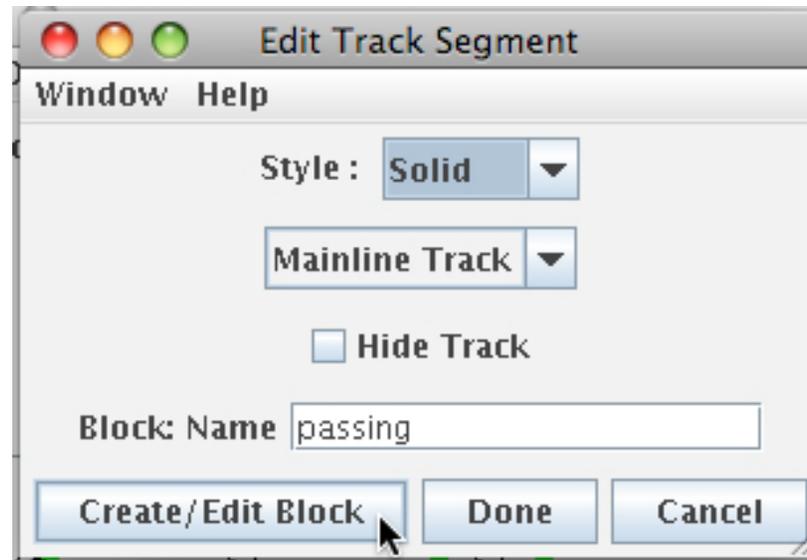


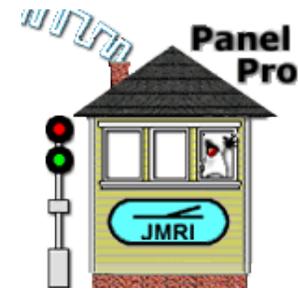
Animation. Add “Blocks” and define “Mainline” track.





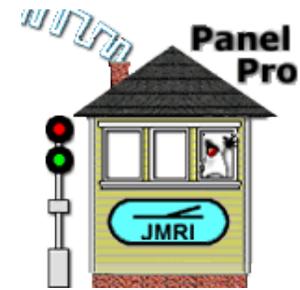
Select “Mainline Track”, type a name for the block, and click “Create/Edit Block”.





Enter name of Occupancy Sensor, select “Red” for color of occupied track, select “Cyan” for alternate, and click “Done”.

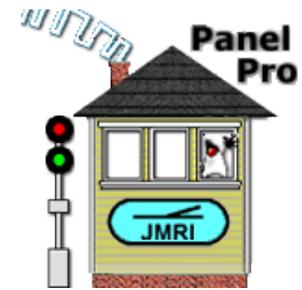
A screenshot of the "Create/Edit Block" dialog box in the JMRI software. The window has a title bar with three colored buttons (red, yellow, green) and the text "Create/Edit Block". Below the title bar are "Window" and "Help" menu options. The main area contains several fields and dropdown menus: "Name: passing", "Current Use Count: 3", "Occupancy Sensor: occupancy pass" (text input), "Occupied Sense: Active" (dropdown), "Track Color: Black" (dropdown), "Occupied Track Color: Red" (dropdown), "Alternate Track Color: Cyan" (dropdown), and "Memory Variable Name: IM4" (text input). At the bottom are "Done" and "Cancel" buttons.



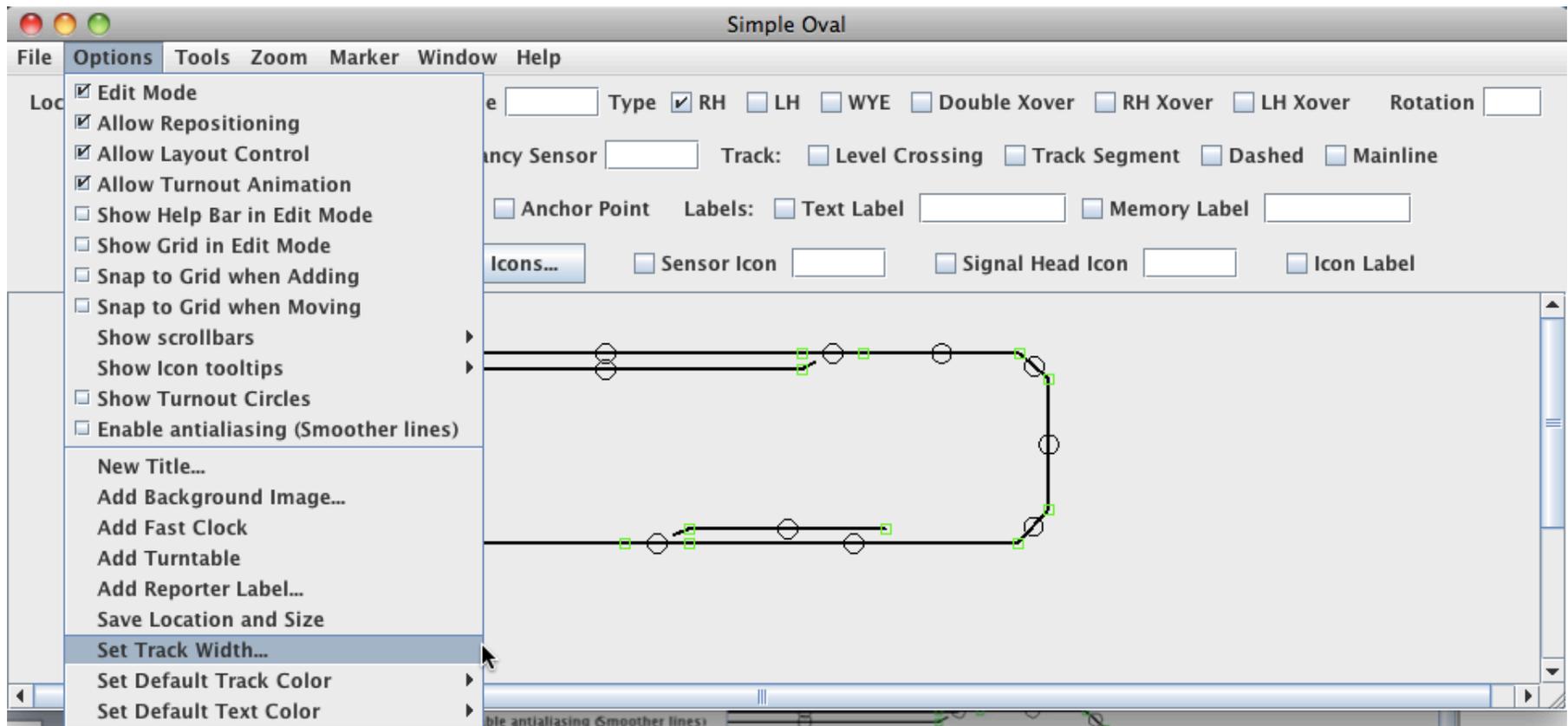
Occupancy Sensors were previously entered into the Sensor Table.

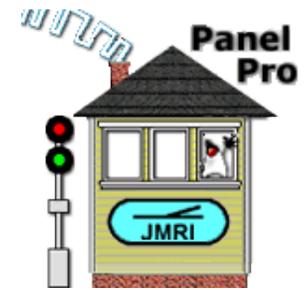
Sensor Table					
File Window Help					
System	User Name	State	Comment		Inverted
ISCLOC...		Inactive		Delete	<input type="checkbox"/>
LS10	occupancy nw	Inactive		Delete	<input type="checkbox"/>
LS11	occupancy sw	Inactive		Delete	<input type="checkbox"/>
LS12	occupancy pass	Inactive		Delete	<input type="checkbox"/>
LS13	occupancy side	Active		Delete	<input type="checkbox"/>
LS14	occupancy s	Inactive		Delete	<input type="checkbox"/>
LS15	occupancy ne	Inactive		Delete	<input type="checkbox"/>
LS16	occupancy se	Inactive		Delete	<input type="checkbox"/>
LS17	occupancy i	Inactive		Delete	<input type="checkbox"/>

Add ...



Note mainline track is wider. Select “Set Track Width...”.





Mainline track and side track can be different widths.
Click “Done” to use the defaults.

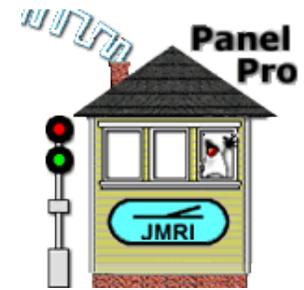
Set Track Width

Window Help

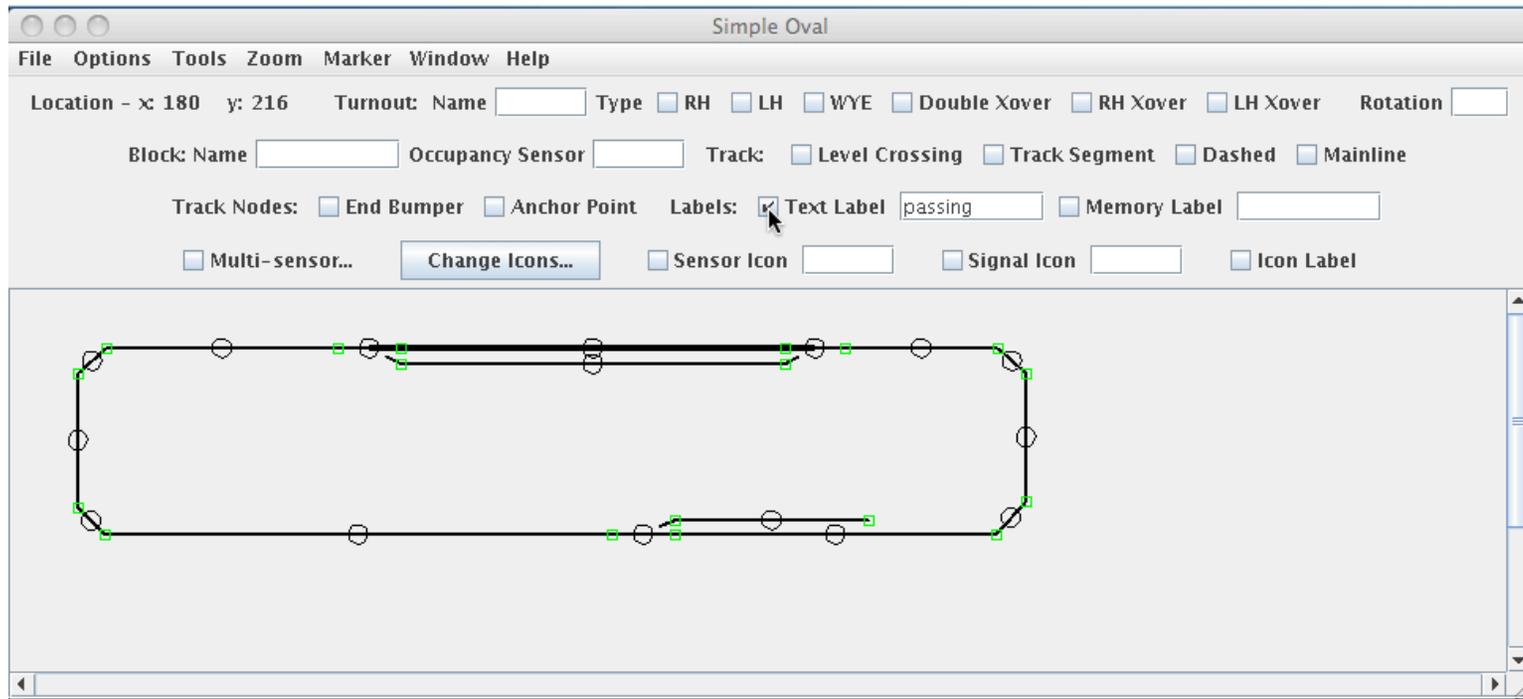
Side Track Width

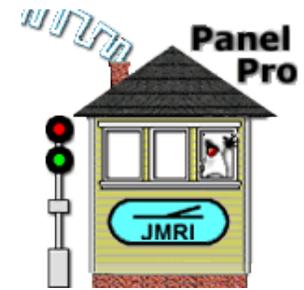
Mainline Track Width

Done Cancel

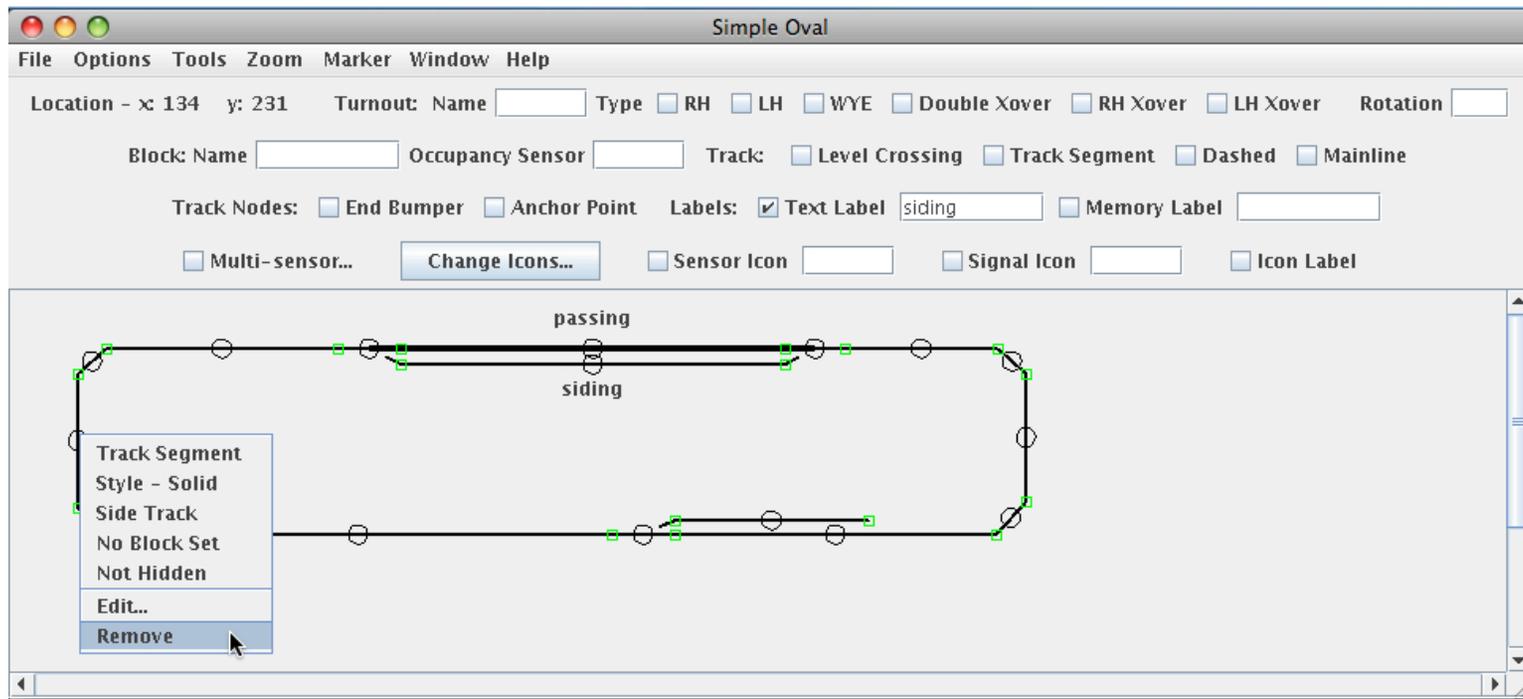


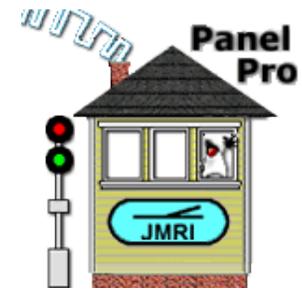
Add a Text Label to label the block.



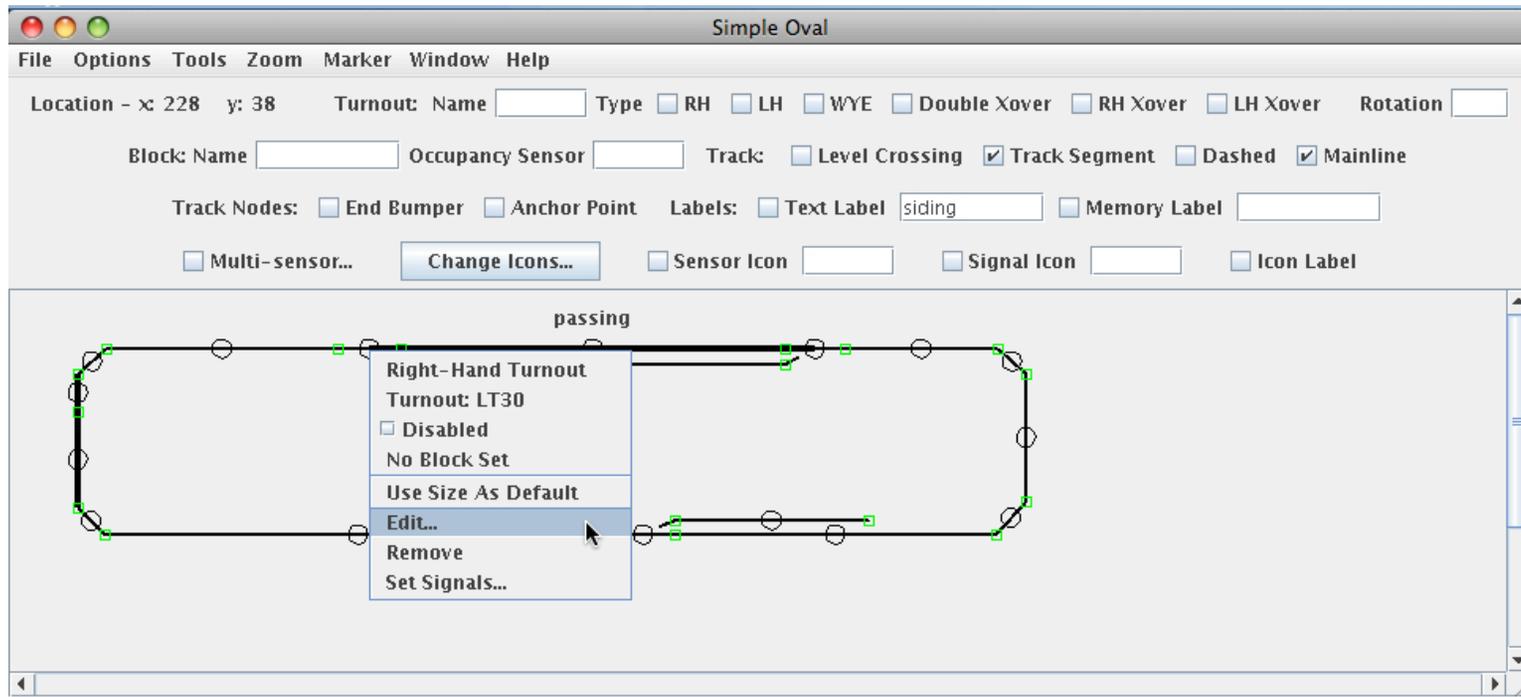


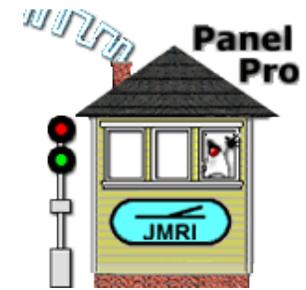
Add a block boundary point on the left side of the oval.



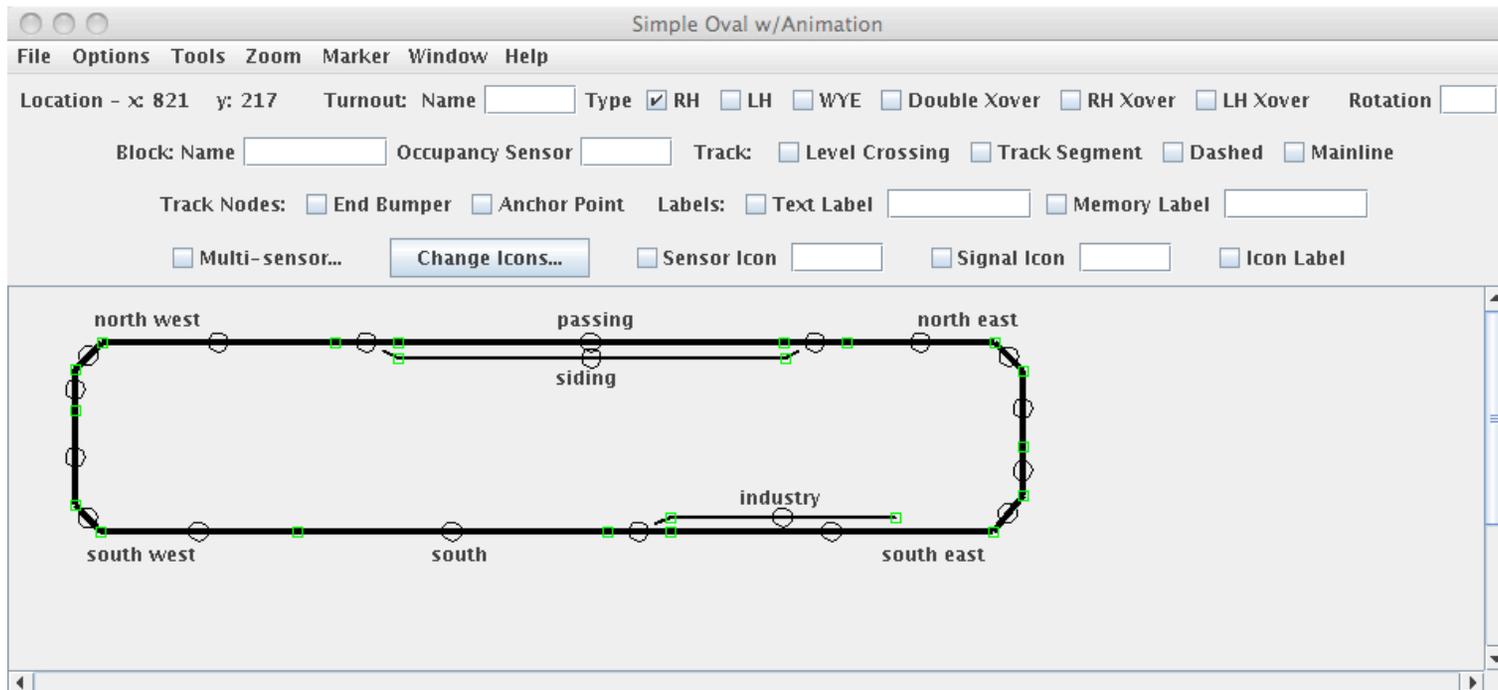


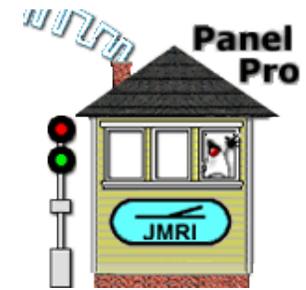
Next, set the Blocks for all turnouts and track segments, and add two more block boundaries.



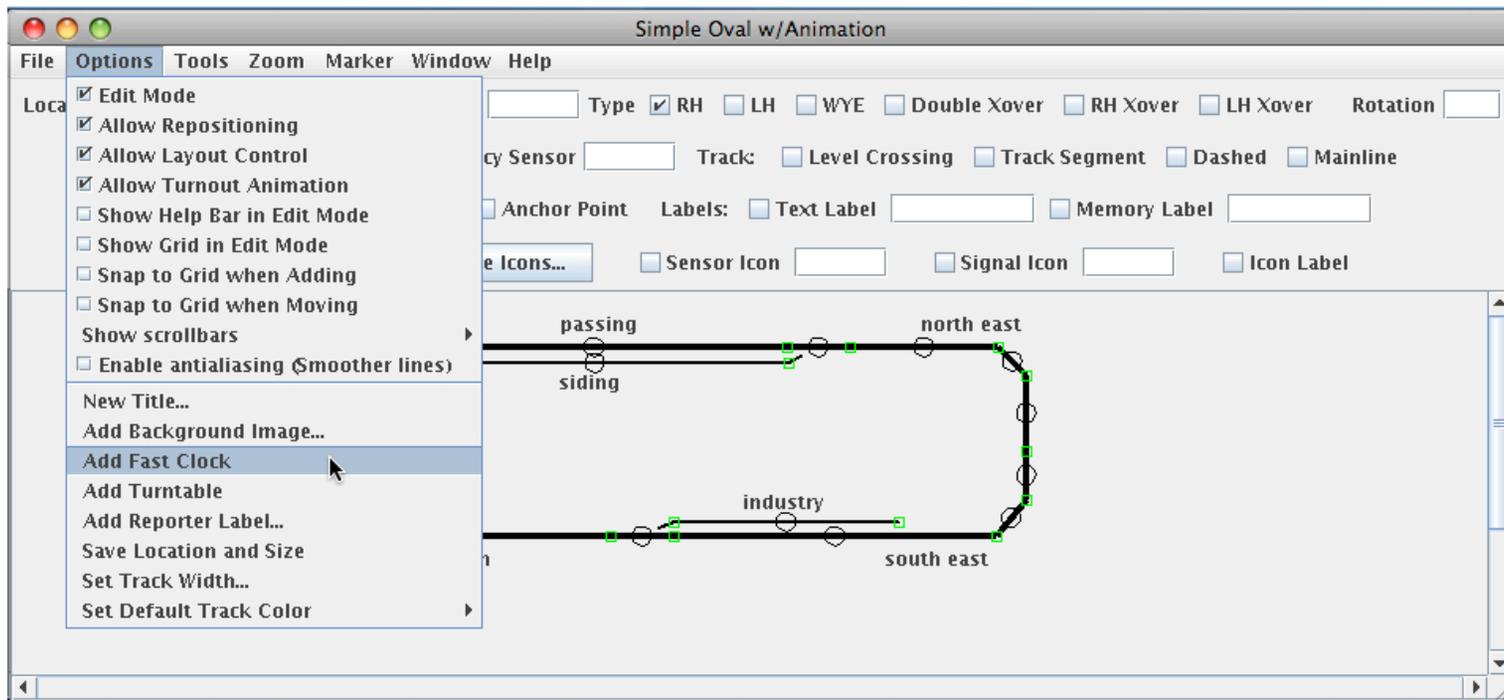


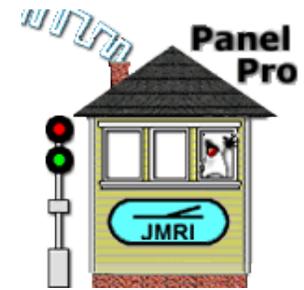
Use a Logix to simulate a Train. First add a Fast Clock.



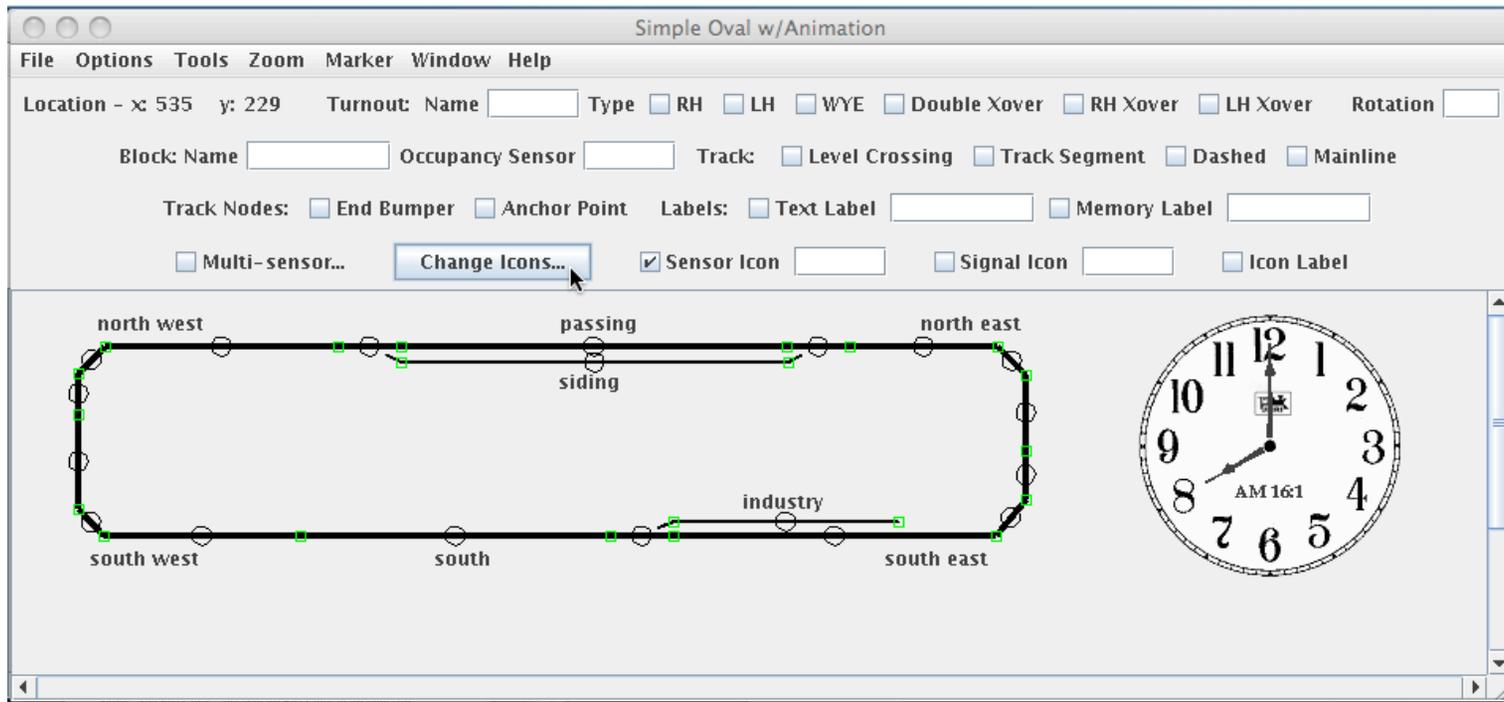


Select “Add Fast Clock”, and drag the Fast Clock to the right side.





Need to add a button to start the simulation. Change Sensor Icon.

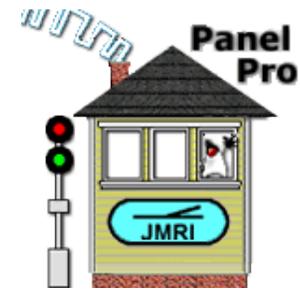
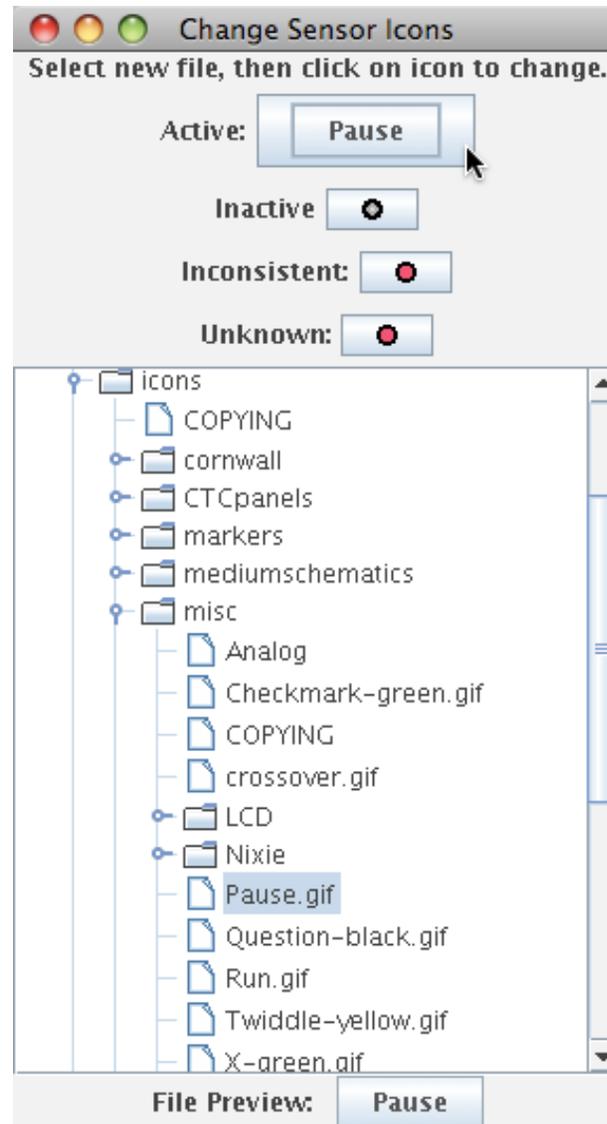


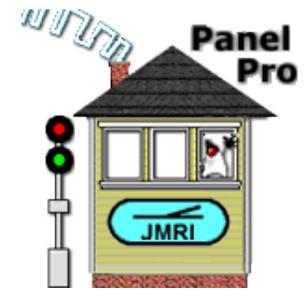


Set the Pause.gif icon
for Active, and

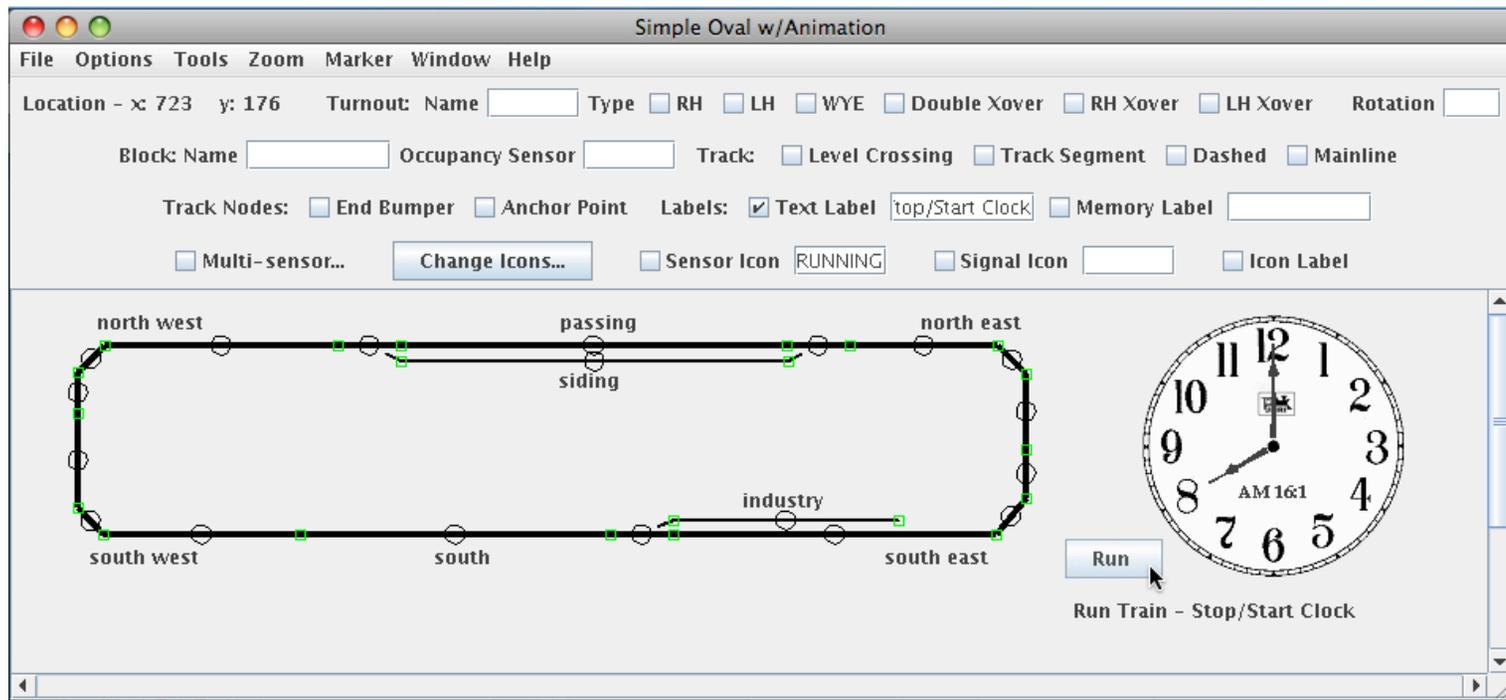
Set the Run.gif icon
for Inactive.

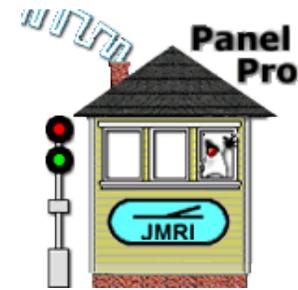
Then close the window.





Entered ISCLOCKRUNNING for Sensor, and shift-click near the clock.





What is Train Tracking?

Each Block has a “value”.

“Value” is automatically passed from Block to Block as a train moves from Block to Block.

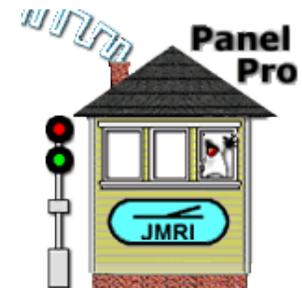
The “value” follows the train around the layout.

Setting the “value” to a train name, passes the train name around.

If a Memory Variable is linked to each Block, Layout Editor will automatically copy the “value” of the Block into the Memory Variable.

Using a Memory Label near each block, we can display the name of the train in that block.

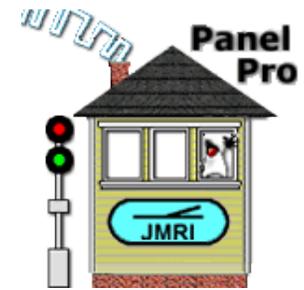
Since Layout Editor knows the full connectivity of its layout, it sets this up automatically.



Memory Table - a Memory Variable defined for each Block

Memory Table				
File	Window	Help		
System	User Name	Value	Comment	
IM 1	siding			Delete
IM 2	north east			Delete
IM 3	north west			Delete
IM 4	passing			Delete
IM 5	industry			Delete
IM 6	south			Delete
IM 7	south west			Delete
IM 8	south east			Delete

Add ...



Ensure that each block has its Memory Variable.

Create/Edit Block

Window Help

Name: passing

Current Use Count: 3

Occupancy Sensor:

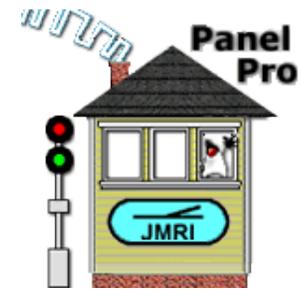
Occupied Sense: ▼

Track Color: ▼

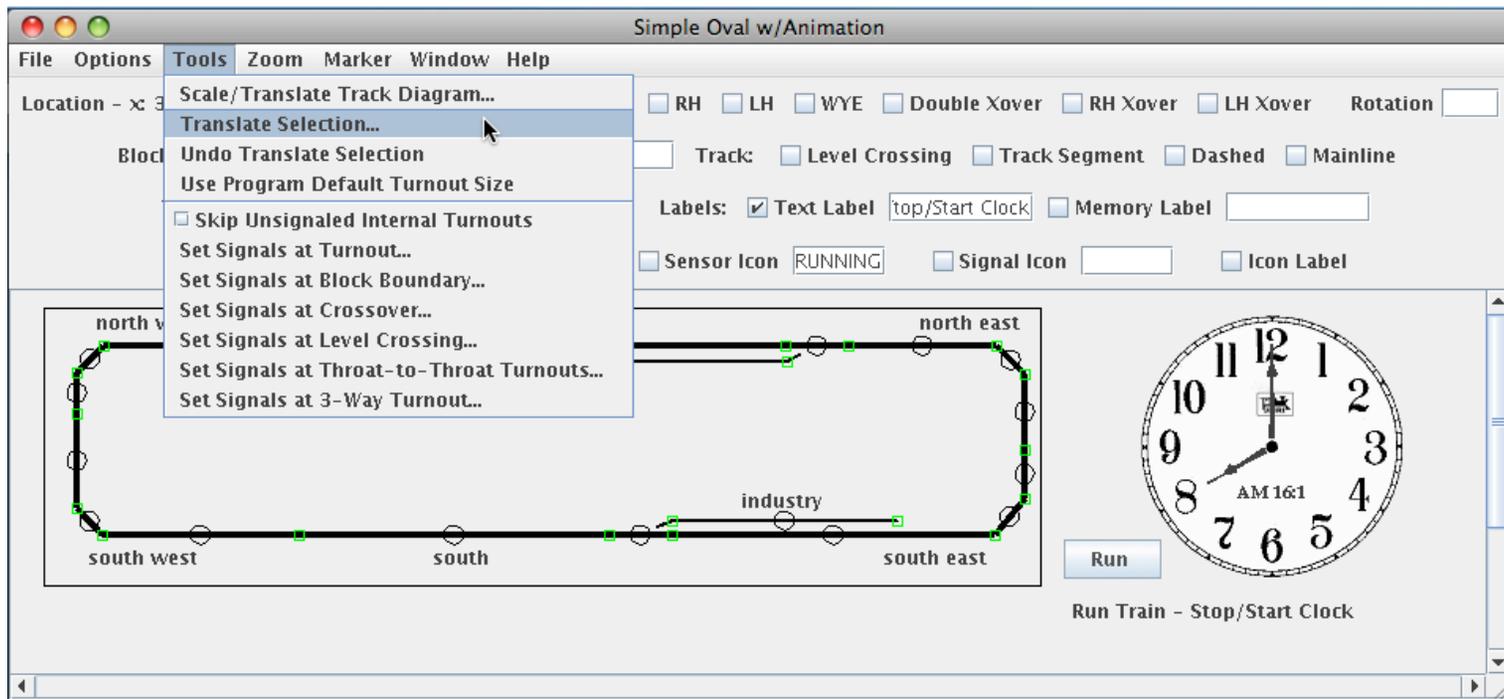
Occupied Track Color: ▼

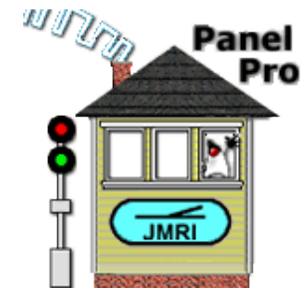
Alternate Track Color: ▼

Memory Variable Name:



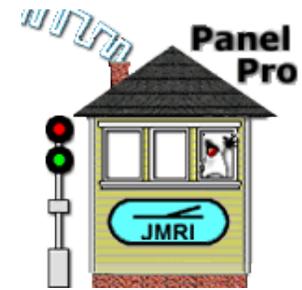
Need more room at the top to place Memory Labels.



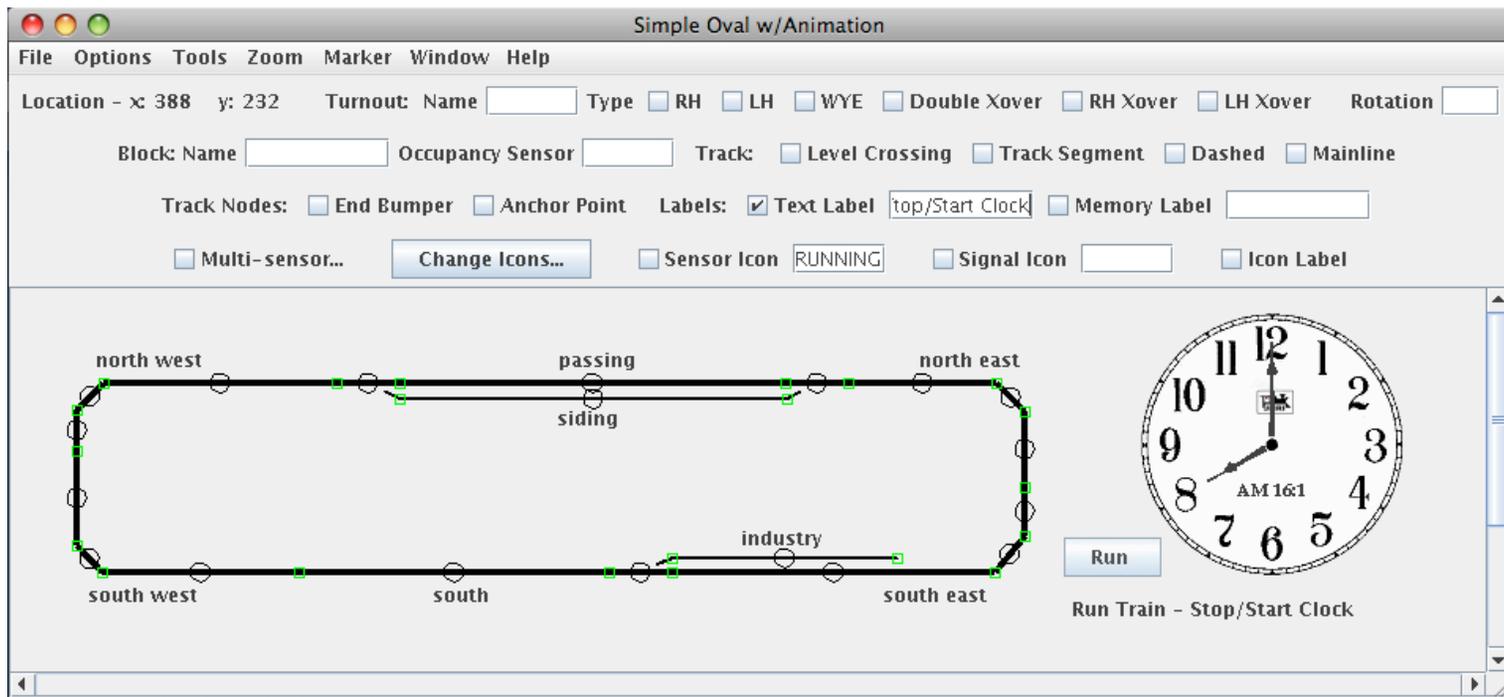


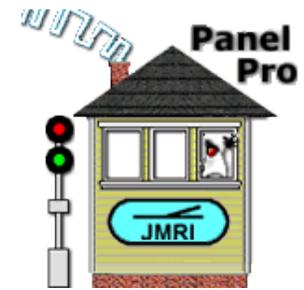
Enter a vertical translation, and click Move Selection



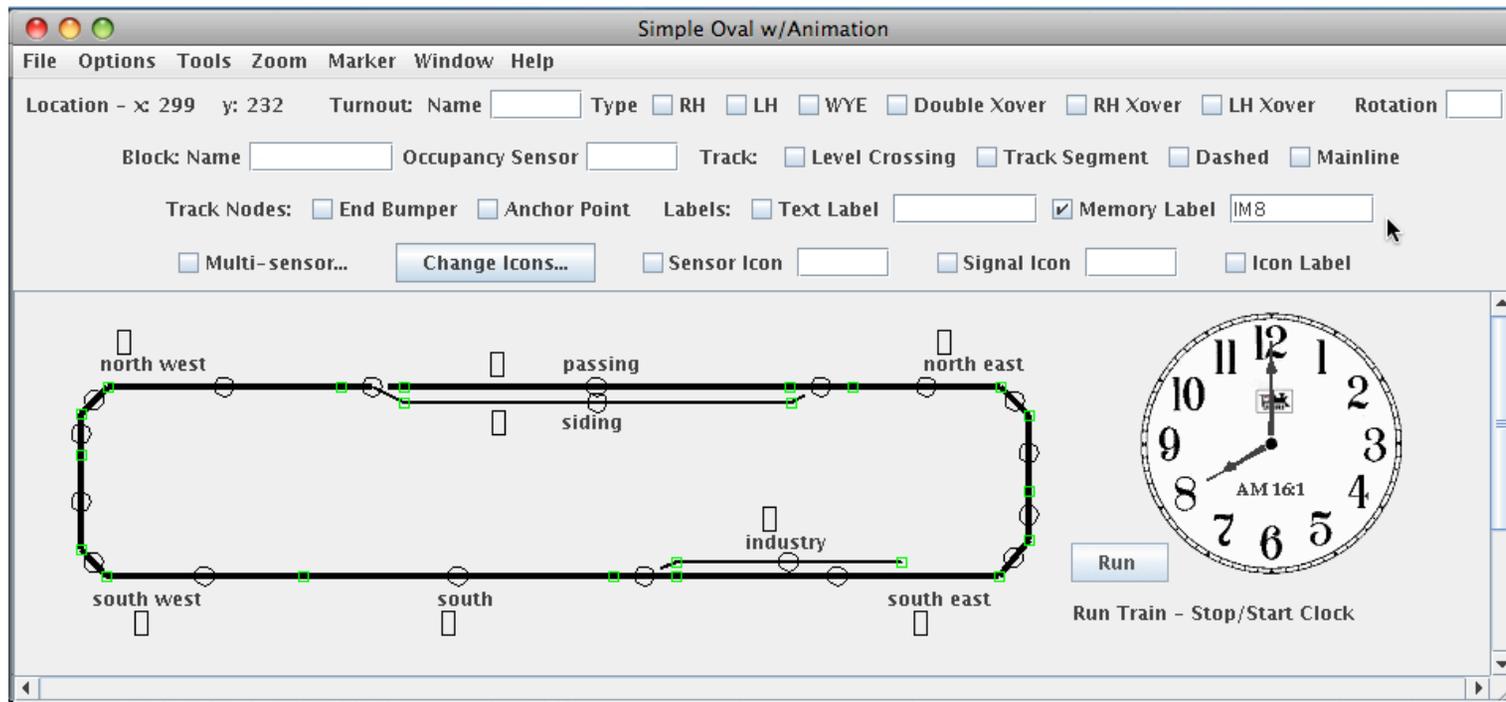


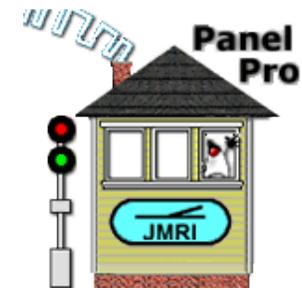
Near each Block place a Memory Label for its Memory Variable





A small rectangle marks the location of each Memory Label.

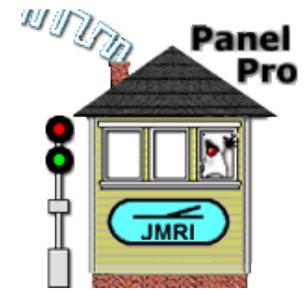




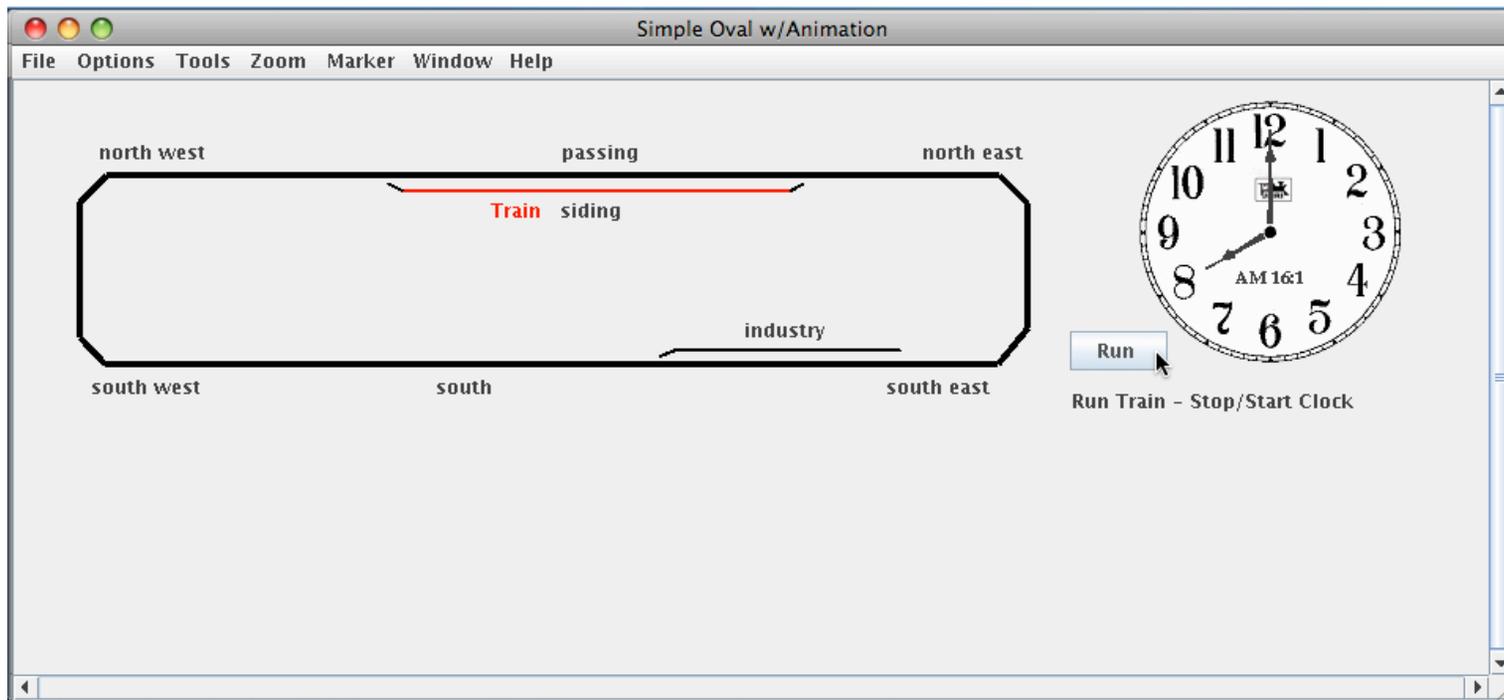
Place the train in the “siding” block by entering it in the Block Table.

System	User Name	Value	Comment	Delete	Direction	Length	Curvature
IB1	siding	Train		Delete	None	0.00	None
IB2	north east			Delete	None	0.00	None
IB3	north west			Delete	None	0.00	None
IB4	passing			Delete	None	0.00	None
IB5	industry			Delete	None	0.00	None
IB6	south			Delete	None	0.00	None
IB7	south west			Delete	None	0.00	None
IB8	south east			Delete	None	0.00	None

Add ... Length in Inches Length in Centimeters

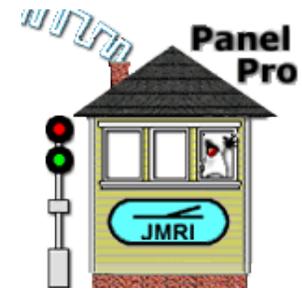


Train is in the siding.

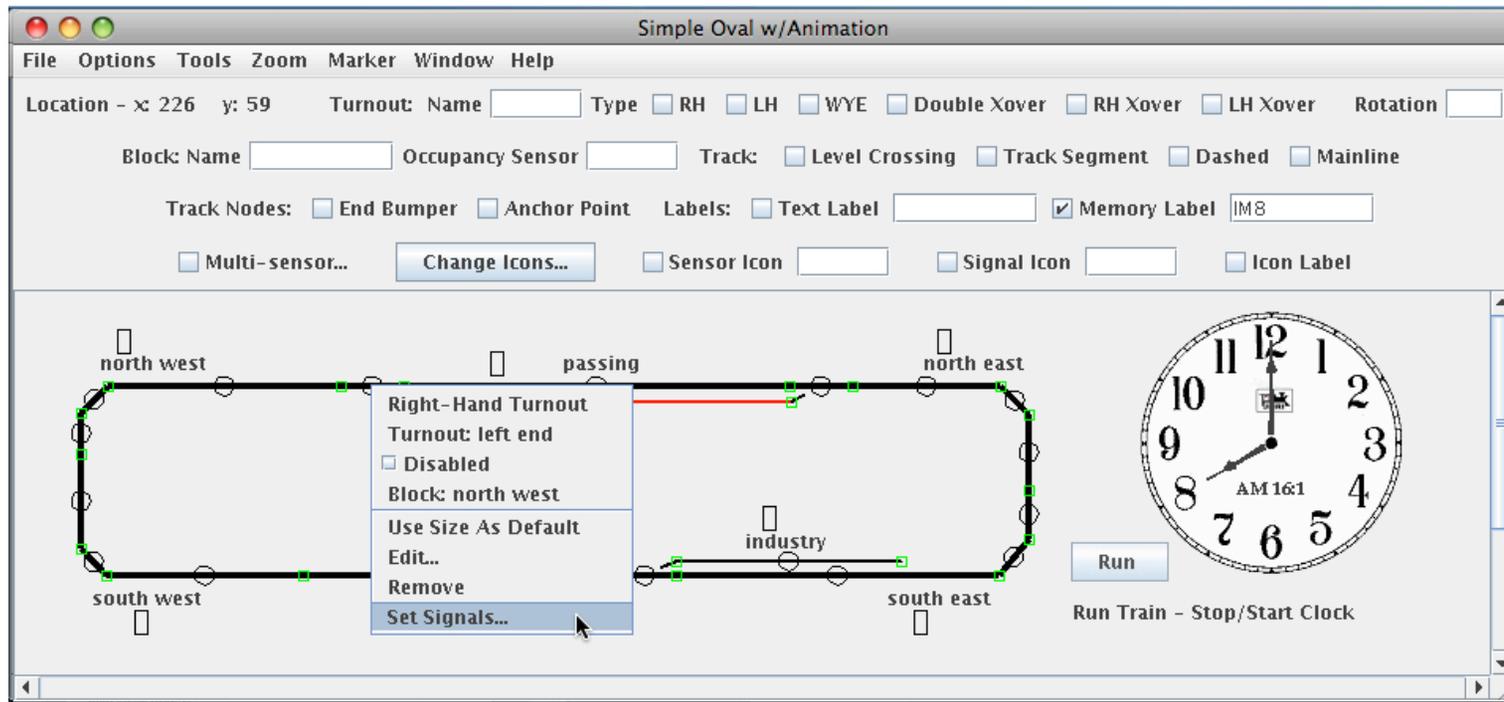




Add Signals



Add Signals using Layout Editor's Set Signals... Tools.





Enter Signal Heads to tell Layout Editor which head is where.

Options:

- 1) Place Signal Icon on the panel.
- 2) Set up Logic

(Signal Heads must be in the Signals Table.)

Set Signals at Turnout

Window Help

Turnout Name : left end

Signal Heads

Throat - Continuing : IH1

Add Signal Icon to Panel Set up Logic

Throat - Diverging : IH5

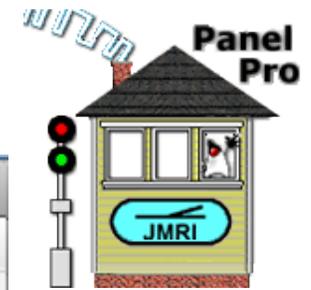
Add Signal Icon to Panel Set up Logic

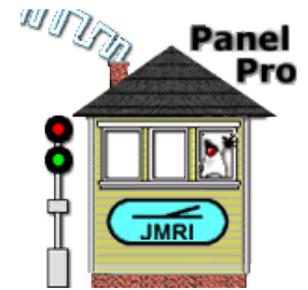
Continuing : IH2

Add Signal Icon to Panel Set up Logic

Diverging : IH3

Add Signal Icon to Panel Set up Logic





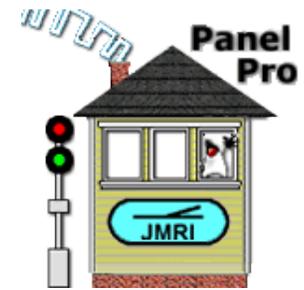
The Signal Table with all pre-entered Signal Heads.

User Names indicate where each Signal Head is placed.

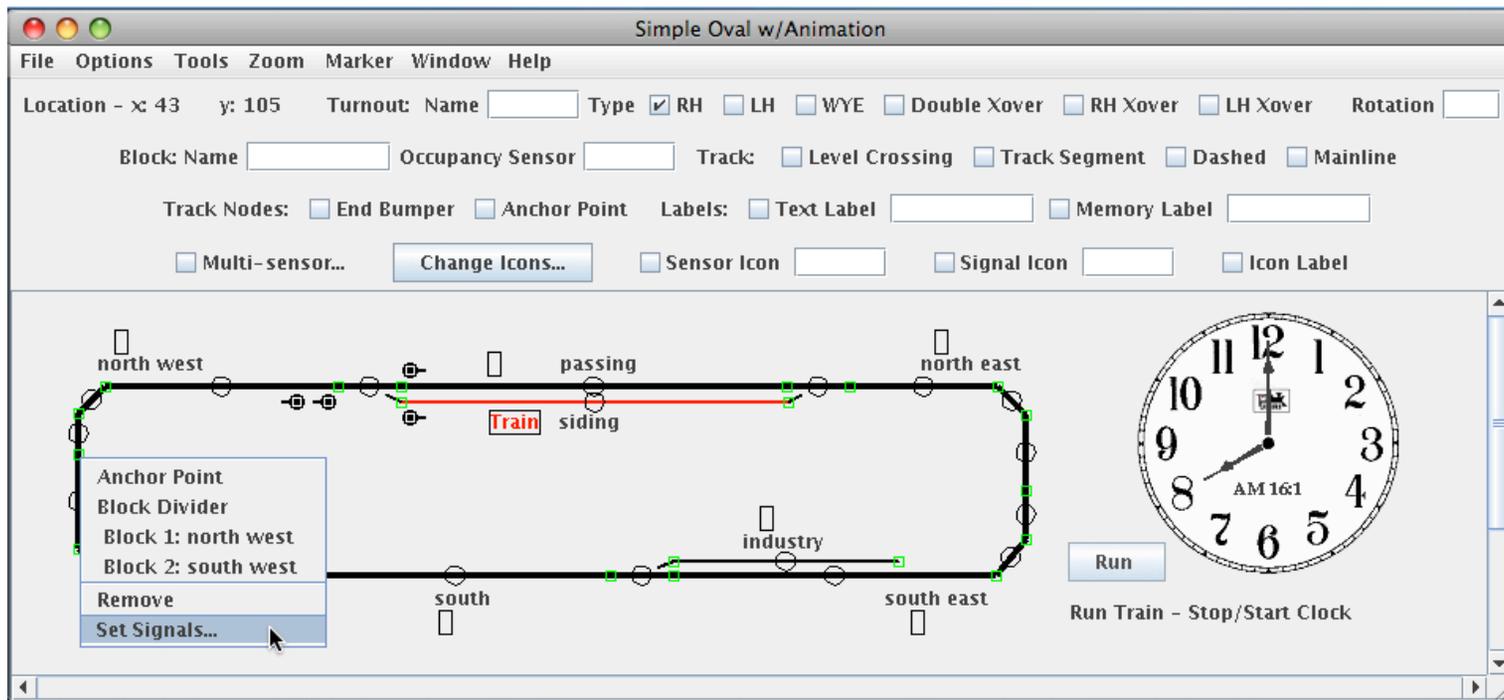
All are “Triple Output” type.

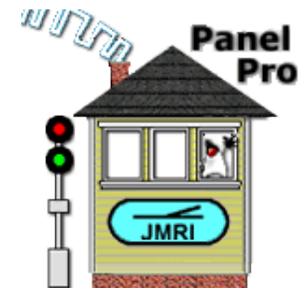
System	User Name	State	Comment		Lit	Held	
IH1	left throat 1	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH2	left continuing	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH3	left diverging	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH5	left throat 2	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH10	right throat 1	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH11	right throat 2	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH12	right continuing	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH13	right diverging	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH14	left east	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH15	left west	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH16	bottom east	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH17	bottom west	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH18	industry facing	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH19	industry continuing	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH20	industry diverging	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH21	right east	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit
IH22	right west	Dark		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edit

Add ...



Note Signal Icons. Next set signals at the block boundary on the left.





Block Boundary
between
north west
and
south west

Set Signals at Block Boundary

Window Help

Block 1 Name : north west

Block 2 Name : south west

Signal Heads

East (or South) Bound :

Add Signal Icon to Panel Set up Logic

West (or North) Bound :

Add Signal Icon to Panel Set up Logic

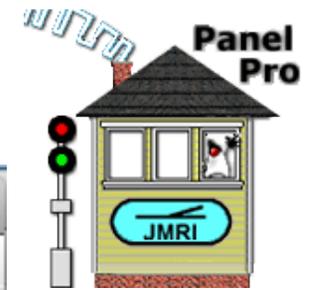


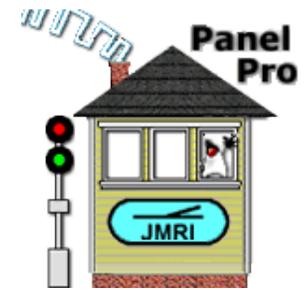
After placing all
Signal Head Icons,
then, revisit all
turnouts and
block boundaries,
this time checking
“Set up Logic”.

**Logic will be set up
for ABS signalling.**

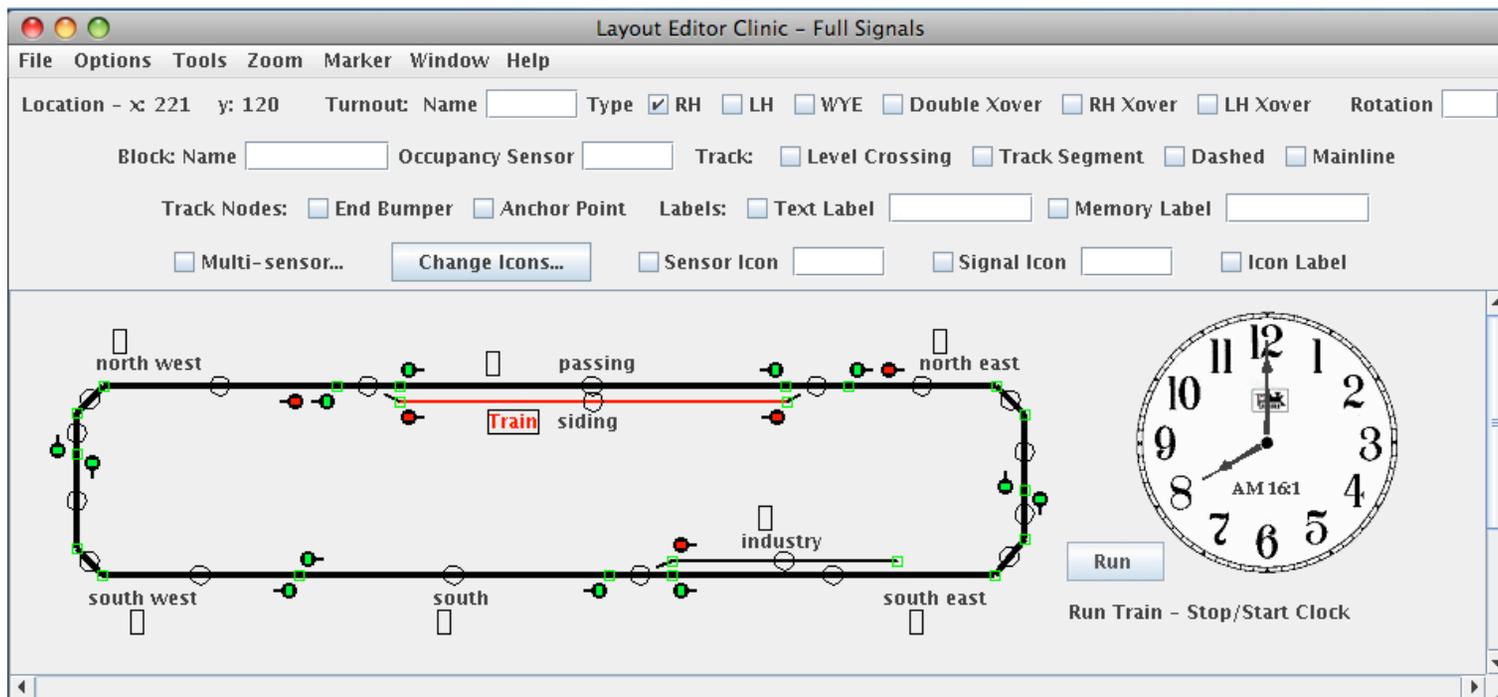
A screenshot of a software dialog box titled "Set Signals at Turnout". The window has a standard Mac OS-style title bar with red, yellow, and green window control buttons. Below the title bar is a menu bar with "Window" and "Help" options. The main content area is titled "Turnout Name : left end". It contains a "Signal Heads" section with a "Get Saved" button. Below this are three sections for configuring signal heads:

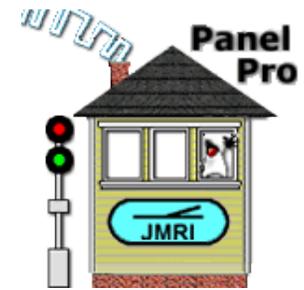
- Throat - Continuing :** Input field contains "IH1". Below it are two checkboxes: "Add Signal Icon to Panel" (unchecked) and "Set up Logic" (checked).
- Throat - Diverging :** Input field contains "IH5". Below it are two checkboxes: "Add Signal Icon to Panel" (unchecked) and "Set up Logic" (checked).
- Continuing :** Input field contains "IH2". Below it are two checkboxes: "Add Signal Icon to Panel" (unchecked) and "Set up Logic" (checked).
- Diverging :** Input field contains "IH3". Below it are two checkboxes: "Add Signal Icon to Panel" (unchecked) and "Set up Logic" (checked).

At the bottom of the dialog are three buttons: "Change Signal Icon", "Done" (with a mouse cursor hovering over it), and "Cancel".

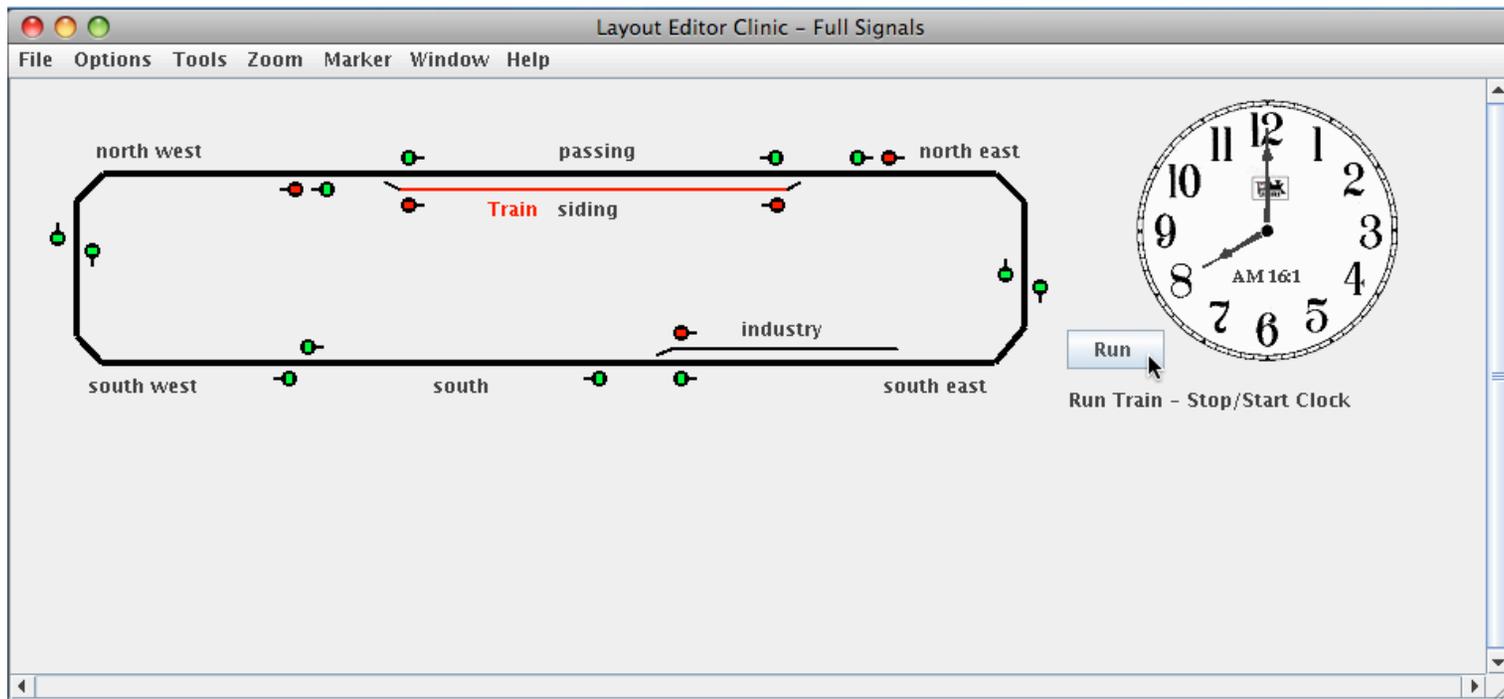


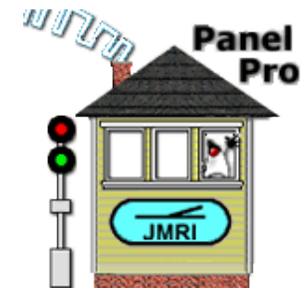
All signals are placed, and ABS signal logic is functioning.





Leave Edit Mode, and run train simulation.





This clinic is available as a PDF file:

JMRILayoutEditor2010.pdf

To run the demos, view the tables and the Logixs that simulates train running, you also need this file:

LayoutEditor2010.xml