

Modular Model Railroading

Potomac NMRA Division mini-con

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Questions are welcome

Corrections are even more welcome

Definitions

- Layouts come in two forms: Fixed location (permanent) and portable. Today we are discussing portable layouts.

Portable model railroading is a form of model railroading where the layout is comprised of individually transportable pieces. These pieces are called modules. Modules have agreed upon frontier (end) dimension, height, track arrangement, and wiring standards.

- Portable layouts can be classified into two broad categories: **Sectional** and **Modular**.

Sectional Layout Concepts

- A sectional portable layout is one where each piece has a designated neighbor. It is as if you cut a fixed layout into pieces and transported it to a new location. Typically there is an overall scenic theme.
- I do not know of any Sectional layouts in the Mid-Atlantic area.

Sectional Layout Advantages:

- Quick layout assembly.
- Very reliable – interconnection problems get fixed and stay fixed.
- Scenery flows from module to module.
- Fixed size and track plan – easy to plan a setup.
- Probably has a corporate club structure – officers, dues, etc.

Sectional Layout Disadvantages

- Need 100% of modules to be present.
- Fixed size and track plan.
- Probably has a corporate club structure – officers, dues, etc.

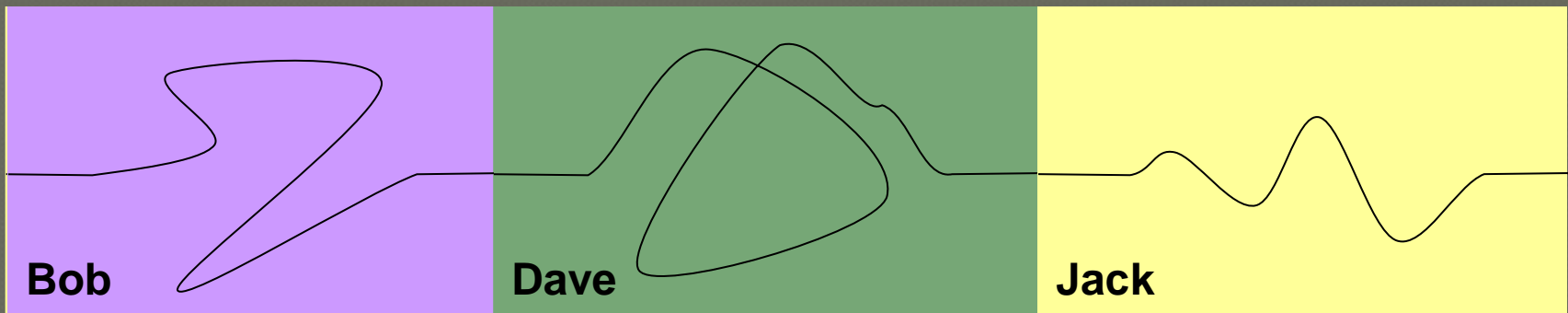
Modular Layout Concepts

- A modular portable layout is one where modules can be used anywhere in the layout as needed. There may or not be an overall scenic theme.
- I am going to spend most of my time talking about this.
- Local modular modelers usually form local groups or clubs of varying organizational levels.
- These are the modular layouts you see at train shows.

Modular Layouts

(Frank Martin StARR)

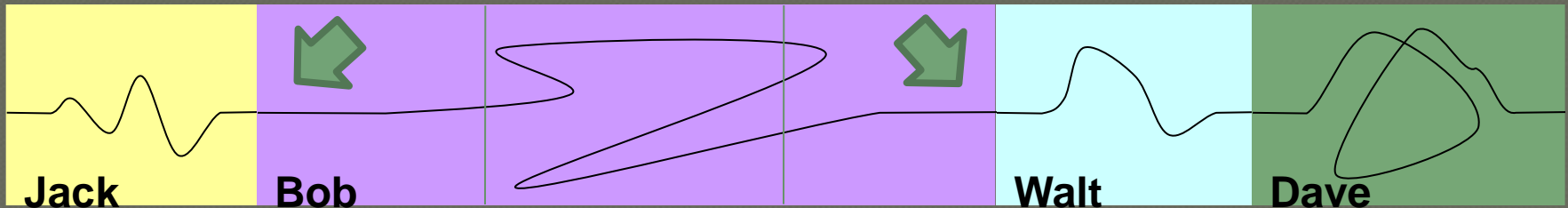
- Start with an easily transportable module
- Add more modules ...
- Take the layout apart; take modules home
- Work on modules; wait for next session
- Next session; put together another layout



Modules can be Sectional

(Frank Martin StARR)

- Bob redesigned his module making it longer; so long that he had to cut it into sections.
- However, he kept to the standards at the intended modular interfaces (ends); so,
- More modules can still be added ...



- Bob must bring all three sections of his module and connect all the sections together to have a module and to participate in the session

Advantages of Modular Layouts

- Layout can be sized to fit available space.
- Layout design depends on the inventory of available modules.
- Individual modelers or local groups can attend any invitational setup using their interface standard.

Disadvantages of Modular Layouts

- Can be interconnection problems depending on the skill level of the module builders. More of an issue for an invitational setup.
- Scenery can be “choppy” – desert followed by farm followed by steel mill followed by forest followed by...
- Harder to plan than a sectional layout. Somebody has to figure out where the modules will go, how they will be wired together, etc.

Modular Railroading for the Individual

Why do I do Modular Railroading?

Where I live
a common housing style around here



My basement
No big layout for me! ☹️



My stored train module

I carry it out to the garage to work on it

2 ft x 4 ft x 1 ft deep



And the blue box holds scenery



Advantages of modular railroading for the individual modeler

- Doesn't need much room.
- Economical.
- Module can be finished in your lifetime.
- Small – can be super detailed.
- Social – not trapped in the basement.
- Easy to work on underneath stuff – just flip it over!
- When you move you can take it with you.
- Can experiment with new techniques.

Disadvantages of modular railroading for the individual modeler

- Have to transport, assemble, and disassemble to use it.
- Module size limited to what you can transport.
- Somebody has to organize a layout setup to transport your module to.
- Not very useful without other modules or auxiliary parts (staging, fiddle tracks).
- Module size can limit your options.

Transport Issues

I am limited to what can fit in a Nissan Sentra



An alternative solution,
but most people use trailers



- North Carolina Sipping & Switching Society self propelled storage

Who is modular railroading good for?

- New to the hobby – manageable project scope, can transport it to more skilled modelers for help.
- Space limited modelers.
- Downsizing modelers.
- Somebody who wants to experiment with a different scale or techniques.

Modular Railroading Formats

By format I mean the style of
modular railroading you work in

Modular Railroading Formats ^{2/2}

- All formats define table dimensions, endplate track arrangements, and electrical characteristics for that format.
- The module format defines or limits your options.
- Your preferences can help you choose a module format.
- Format A will not go to Format B without some work, will need adaptor parts.
- Format limits who you can connect with – you may be a geographical minority.

N-Trak ^{1/5}

- Web-site: <http://ntrak.org/>
- Standard sheet:
<http://ntrak.org/documents/man2pg.pdf>
- N Scale.
- Developed in 1973 – first NMRA convention appearance 1974.
- Designed for large public display layouts and long trains, but good for home and club use too.

N-Trak ^{2/5}

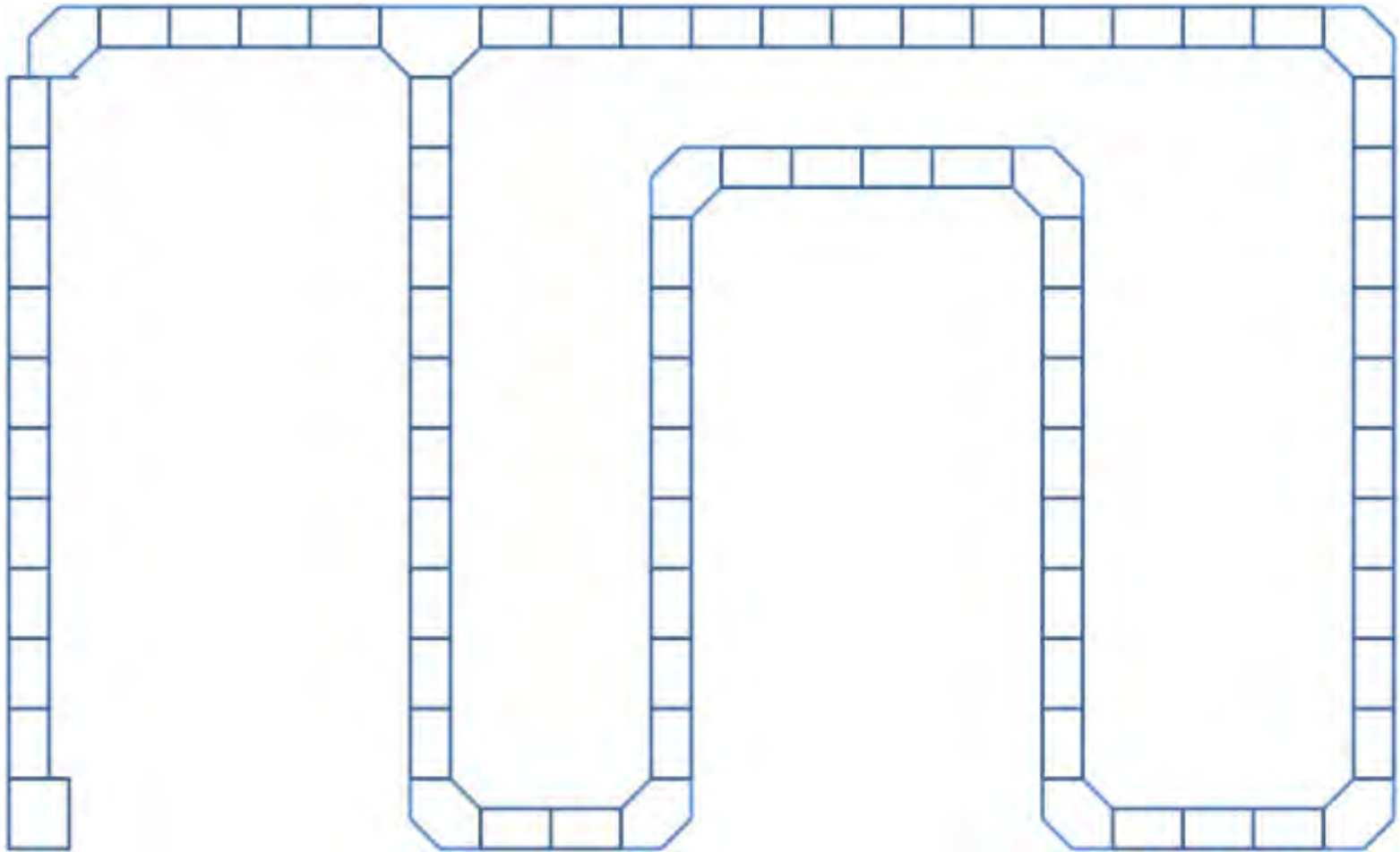
- Basic table is 2 x 4 foot, 40" floor to top of rail, legs are adjustable +/- 1".
- Module width is 2 foot across; length can be 2, 4, 6, or 8 foot long. The module length needs to be multiple of 2 foot.
- Module lengths are fixed to allow construction of loops.
- Has a sky board backdrop – therefore module has a front and back.

N-Trak ^{3/5}

- Three tracks – 2 main lines E/W and a branch line. The branch may be optional – I'm not sure on that.
- Each ends 4.5" from module edge, so 9" snap-track piece is used to bridge module ends.
- Main line minimum radius = 24"
- Branch line minimum radius = 18"
- DC control, maybe DCC?

N-Trak or NMRA style layout ^(4/5)

Big loop with branch ending a reversing loop



Award winning N-Trak module (5/5)

Detroit NMRA Convention



NMRA Format (1/4)

- Web-site: [http: //www.nmra.org/introduction-overview](http://www.nmra.org/introduction-overview)
- Module Standards and RP sheets: <http://www.nmra.org/index-nmra-standards-and-recommended-practices>
- Many Scales – Z, N, TT, HO, OO, S, O, Tinsplate. Standard and narrow gauge is supported.
- The most popular modular format.
- Derived from the N-Trak format. I found documents dated 1990 but I think it goes back further than that.

NMRA Format (2/4)

- Table dimensions are similar to N-Trak.
- Module lengths are fixed to promote construction of a circular looping layout.
- Three tracks – 2 main lines E/W and a branch line. The branch may be optional – I'm not sure on that.
- HO rail = code 100.
- DC Control, maybe DCC?
- Very well documented.

NMRA Format club layout (3/4)

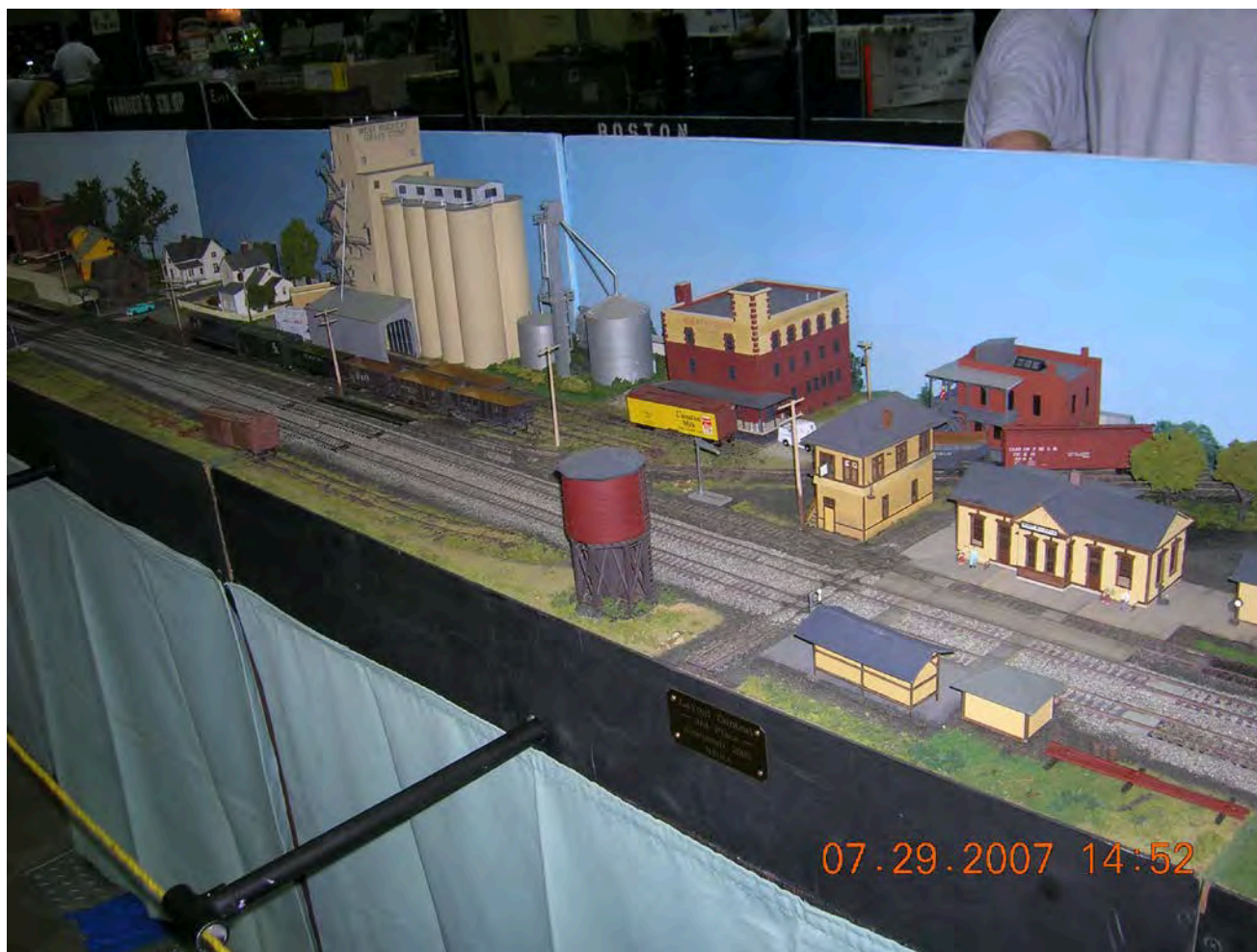
Stoney Creek Model RR Club
Detroit 2007 NMRA Convention



07.28.2007 11:43

Award winning HO NMRA module ^(4/4)

possibly affiliated with NMRA Mid Central Region module group
Detroit NMRA Convention



North Carolina Sipping & Switching Society (NC S&SS ^{1/8})

- Web-site and module standards:
<http://groups.yahoo.com/group/SandSSofNC/> - a Yahoo group that you have to join, but there are no dues or spam, the guys are pretty friendly and they are happy to answer questions.
- HO – standard and narrow gauge.
- Independently developed in North Carolina in the late 1970s.
- Designed for easy setup and reliable operation of long (100+ cars) mainline trains.

(NC S&SS _{2/8})

- Emphasis on lightweight quality table and track construction – take the time to build it right so the layout quickly assembles and playtime can begin.
- Tables are constructed of $\frac{1}{4}$ luan plywood – similar to an airplane wing. It makes a light, durable and strong table.
- Uses an endplate peg and socket system to ensure alignment and strong assembled connection.
- There is a standard endplate jig that locates peg and socket location, and rail location.

NC S&SS Endplate Jig

4 holes per end – peg glued into 2 per end
rail positioning guides on top edge of jig
(NC S&SS $\frac{3}{8}$)



(NC S&SS 4/8)



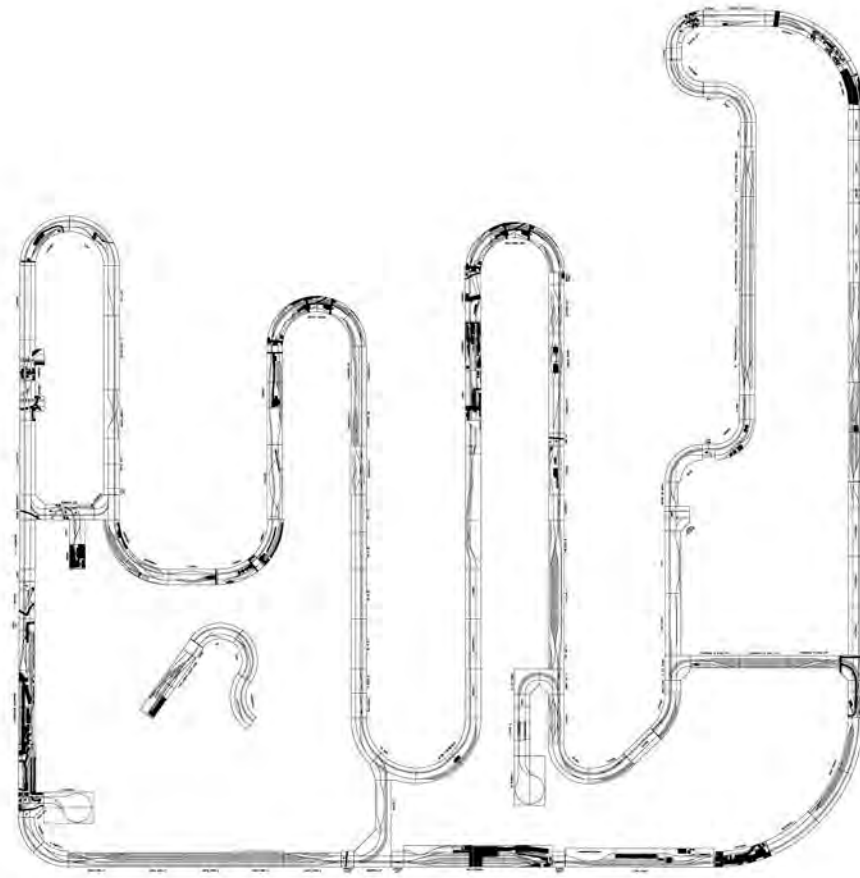
(NC S&SS ^{5/8})

- Does not use fitter rails – rail goes to end of module, where it butt joint mates with rail on the other module – requires precise rail locating. Rail can be any code: 40 to 100. They have some master hand laid track enthusiasts.
- Length – not fixed but I think some multiple of 2 foot. Tables tend to be large 8-12 foot long.
- Width – 30 inch.
- Height = 48 inch floor to top of rail – doesn't worry about leveling tables – sockets vertically align tables and tables are lightweight – no big deal if some legs don't reach the floor.
- Legs are banquet table fold down legs with caster wheels – can push layout sections around as needed.

(NC S&SS _{6/8})

- Three tracks are standard – 8, 10, and 21 inch from front on module. 8 and 10 are E/W mainlines, 21 is the branch switching track.
- Optional track at 12 inch position.
- Not widely distributed - local to NC, Ohio and a few scattered exiles. Rumor has it there is interest in the Norfolk and Baltimore area.

Typical NC S&SS Layout plan (7/8)



A typical NC S&SS module (8/8)



Free-mo ^{1/8}

- Web-site: <http://www.free-mo.org/>
- Module Standards: <http://www.free-mo.org/standard>
- Standard gauge HO but I think there are N, S, and O variants. Narrow gauge too.
- Rail is code 83 and mainline curve radius is 46+”. They want long passenger cars and TOFC flatcars to look good rolling across the layout.

Free-mo ^{2/8}

- Developed in California in the late 1990s – derived from European FREMO standard.
- Free-mo stands for “Free format Modules”.
- Emphasis on quality scenery and realistic operating – goes well with RPM meets.
- Group preference for prototype or proto-freelance modeling –LDEs.

Free-mo ^{3/8}

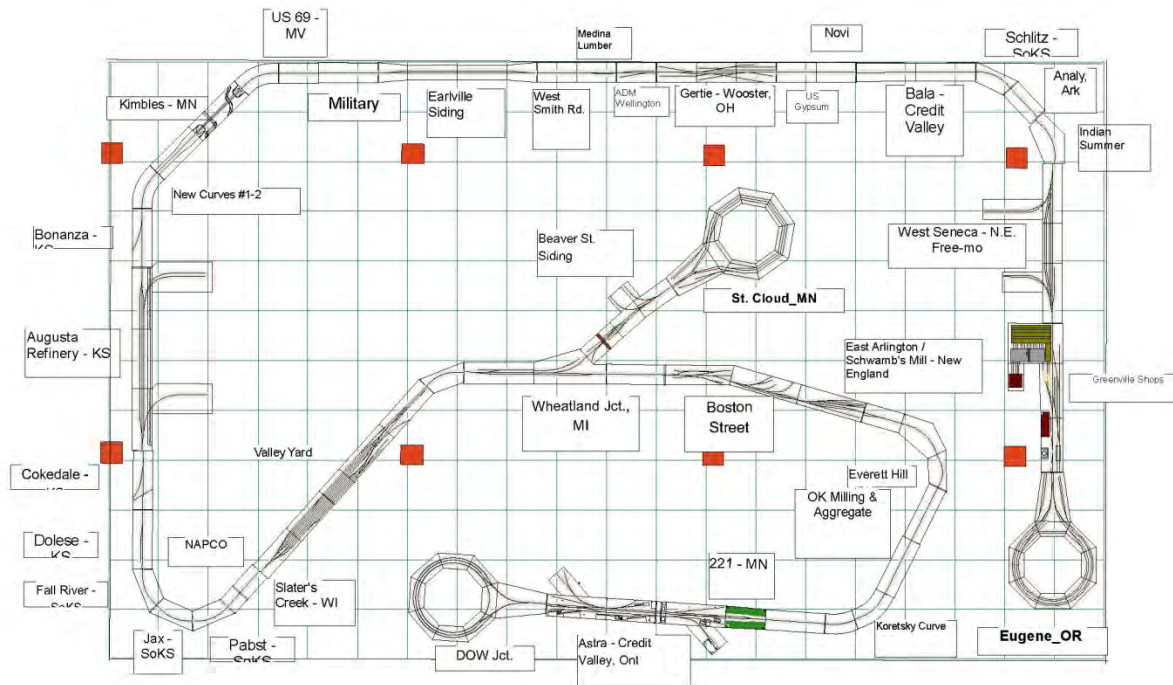
- Free-mo modules are not necessarily rectangular – ok to incorporate bends, corners, peninsulas.
- No backdrop sky board so modules are reversible (no front or back) as needed – useful for curved or bent modules.
- Free-mo layouts are not loops, they are sprawling point to point in nature – maybe reversing loop at ends.
- Endplate dimensions are fixed – what is in the middle is up to you – no width or length restrictions – if you can transport it you can bring it.

Free-mo _{4/8}

- Endplates are 24 or 26 inch wide.
- Endplate track is centered 12 inch from side of module – one track = 24 inch wide, two track = 26 inch.
- Endpoint height is 50 inch floor to top of rail - there is a provision for grades, but I have never seen one – legs are supposed to be adjustable to 62 inches.
- Digitrax DCC.

Typical Free-mo large layout plan (5/8)

Cleveland 2014 NMRA Convention



Capitol Free-mo setup (6/8)

April 2015 Timonium MD

We're looking for more modelers!



Free-mo module in progress (7/8)

Yardville NJ – modeled by Bill Grosse



This is not rectangular! There are two peninsulas and a backplane (8/8)



T-Trak ^{1/8}

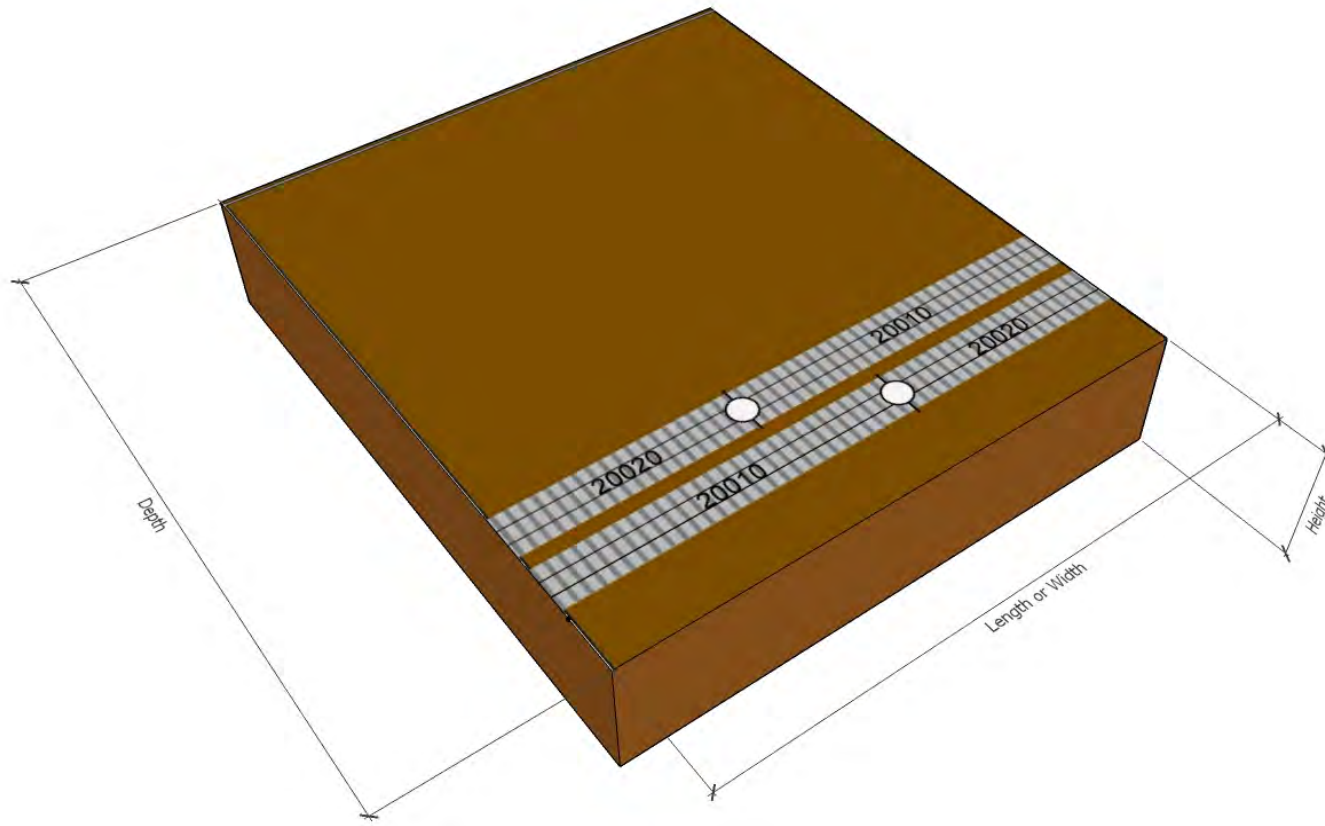
- Web-site: <http://t-trak.org/>
- Module standards: <http://t-trak.org/standards.html>
- All-together different from N-Trak, NMRA, Free-Mo, NC S&SS – so I'm going to go into some detail.
- Developed in 2001 – American and Japanese roots – demo displayed at 2001 NMRA convention. First large setup 2004 Capitol Limited convention in Chantilly!

T-Trak ^{2/8}

- Designed for simple construction, portability and small individual footprint, but large public display layouts and long trains are possible.
- Module does not have legs – they use convention hall tables, set up on table, floor, etc.
- A T-Trak module is a diorama with sectional track, specifically Kato Unitrack. Dimensions are derived from Kato Unitrack sizes.
- Mainly N Scale, but there are Z, HO, S and O scale standards.

Box: length or width, depth, and height

T-Trak $\frac{3}{8}$



T-Trak ^{4/8}

- Dimensions are metric.
- Basic platform length is some multiple of one Kato Unitrack straight track (310mm). So 620 mm, 930 mm, etc.
- Module lengths are fixed to promote construction of loops/circles.
- Platform depth is undefined, but more than 355 mm (14") is frowned on.
- Platform height standard is 70mm, adjustable to 100 mm.

T-Trak ^{5/8}

- Module has a front and back. There may be a sky board backdrop.
- Build box so there is 1mm of track overhang on each end so it can connect to the next module.
- Two tracks – 2 main lines E/W.
- Electrical = Kato standard wiring. For large layouts there is a wiring bus developed by the Northern Virginia NTrak club.

T-Trak layout (6/8)

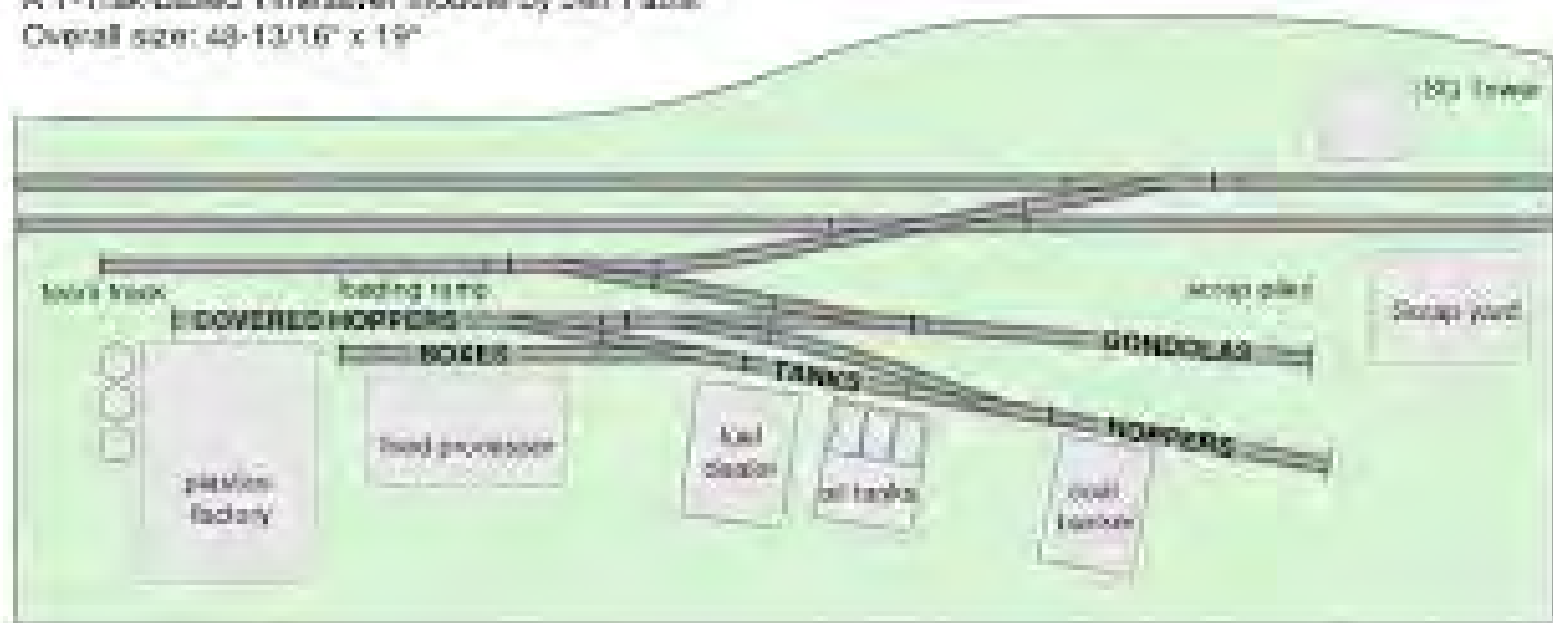


Ambitious T-Trak module ^{7/8}

Susquehannock Industrial Park

A T-Trak-Based Timesaver module by Jeff Fausel

Overall size: 48-13/16" x 19"



Simple T-Trak module ^{8/8}



Format Comparison Grid

Format	Track height	Track code	Track count	Track positions	Table dimensions	DC or DCC
N-Trak	40"	55?	2 or 3	Back track 17" from backdrop – other 2 are 1.5" on center from that	2'W x 2n' L	DC moving to DCC?
NMRA	40"	100	2 or 3	Similar to N-Trak, adjust to bigger scale	2'W x 2n' L	DC moving to DCC?
NC S&SS	48"	Any	3	8, 10, 21 (optional 12?)	30"W x 2n'L	DCC
Free-mo	50"	83	1 or 2	Centered	24 or 26" W variable L	DCC
T-Trak	70mm	Kato Unitrak	2	Front rail 1.5" (38mm) from box front, track 2 = 33mm center to track 1 to match Kato double track dimension	~300mmW x 310mm n	Whatever Kato is

Questions?

Lets go upstairs and look at
modules!