TRAINZ: A NEW ERA

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MANUAL

CONTENTS

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1. BEFORE YOU BEGIN

" Congratulations! You've unwrapped (or downloaded) your new version of Trainz: A New Era. This chapter introduces you to the world of Trainz.

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INTRODUCTION TO TRAINZ: A NEW ERA

After almost 15 years of continuous development and at least 7 major updates, the world of Trainz began to change in late 2013 with the announcement of a Kickstarter "crowdfunding" campaign.

The community that had helped Trainz become a landmark simulation since the first release in 2001 were asked to pledge their support to the campaign to ensure a new era of train simulation could begin.

KICKSTARTER

Trainz Simulator: A New Era - Create, Drive, Operate, Share

by N3V Games

Home   Updates 34   Backers 1,729   Comments 1,488   Brisbane, AU   Video Games

Funded! This project was successfully funded on December 18, 2013.

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TRAINZ A NEW ERA

▶ PLAY

1,729
backers
$191,771 AUD
pledged of $165,000 goal
0
seconds to go

Project by
N3V Games
Brisbane, AU

First created · **15 backed**
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trainzportal.com

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With the success of the Kickstarter campaign on December 18, 2013, the ongoing development of Trainz: A New Era (T:ANE) became a reality.

With a totally new graphics engine built for modern hardware, a range of new features and all the traditional Trainz features from past editions, T:ANE lays the groundwork for even further improvements in the years to come.

For existing Trainz fans, T:ANE will feel quite familiar. For newcomers, it is important to know that Trainz is as much a hobby as it is a game or train simulation. There are many different aspects of railroad operations presented and a variety of different ways in which users can interact with those operations.

This manual is designed to introduce you to the broad range of functionality and to help you begin to unlock the power of all of those features. By reading through this manual and following the advice contained within, you will be well prepared to enjoy many hours (or perhaps many years) of your Trainz hobby.

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COMMON TERMS USED IN THIS MANUAL

Click or Click-LMB or 🖱	use the Left Mouse Button (LMB).
Double-Click	clicking the LMB twice.
Click RMB or 🖱	use the Right Mouse Button (RMB).
Mouse-over	hold the cursor over an object or menu item.
LMB-Drag	click and hold the LMB then drag the mouse.
Hotkey	press the key described to carry out the action.
Menu > Sub-Menu	click on the first menu option, then select or click on the next menu option or button.

GLOSSARY

AI Drivers	The Artificial Intelligence Drivers that drive non-human controlled trains in Trainz.
Bogie	The structure including wheels, axles and suspension that support a traincar body.
Cab Mode	The realistic mode controls used for driving locos in Trainz.
Chair	A support that fixes the rail to the sleeper.
Coupler	Mechanism for coupling together two traincars.
Consist	One or more traincars that are coupled together.
CM	Content Manager.
DCC Mode	The easy mode controls used for driving locos in Trainz.
DLC	Downloadable Content.
DLS	Trainz Download Station.
Frog	The crossing point of two rails in a Switch
Guard Rail	The mechanism used in a Switch opposite the "Frog" to help keep the train wheels on the track.
HUD	Heads up Display. See page 87
Kuid	Unique identifier for Trainz assets.
Junction	Allows trains to pass from one track to another. Also called a Turnout or Switch.
Loco	Locomotive. The engine that powers a train.

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Points	A set of points is yet another term for Switch. The points (or blades) are the animated part of a Switch.
Overlap Distance	The distance beyond a signal allowed for the train to stop in should it pass a signal showing a stop aspect.
Rolling Stock	A non-powered traincar.
Route	The part of the "world" that you explore. Also called Map or Layout.
Session	The "interactive" component of a Route that generally contains trains, instructions and other variable elements.
Sleepers	The support structure for the steel rails of the railroad track. Also called Ties.
Switch	Allows trains to pass from one track to another. Also called a Turnout or Junction.
TAD	Trainz Asset Database.
T:ANE	Trainz: A New Era.
Ties	The support structure for the steel rails of the railroad track. Also called sleepers.
Train	A series of connected traincars. Also called a Consist.
Traincar	Any vehicle that travels on tracks including locos, freight wagons or passenger cars.
Trainz	Generally used to refer to the whole franchise encompassing all the various version of Trainz released since 2001.
Turnout	Allows trains to pass from one track to another. Also called a Switch or Junction.

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GETTING STARTED

To get the most out of your Trainz experience, it's advisable to do some basic preparation. Make sure your PC has up to date graphics drivers, clean your mouse and keyboard, grab the beverage of your choice, adjust your chair, and get ready for a rail journey of a lifetime. Welcome to the world of Trainz!

INSTALLATION

Before installing, ensure that you have sufficient disk space (at least 20GB) and that you have no other programs running.

DVD VERSION

Insert the DVD into your DVD drive. If you have auto run enabled, the installer will start automatically. Otherwise browse the contents of the DVD and double-click on the Setup.exe file found in the root directory.

The Install Wizard will guide you through the installation process where you will need to enter your Product Key found on the inside of your DVD case.

DIGITAL VERSION

You do not require a Product Key to install the Digital Version. Authentication is processed by the store where you purchased T:ANE. i.e. Simulator Central Store, Steam Store or Apple Store.

ADJUST YOUR SETTINGS

To get the most from your Trainz experience, it helps to set your computer up to take best advantage of the high resolution graphics. Click the Settings button in the Launcher to open the configuration screen, then customize the various settings for your hardware and chosen visual preferences.

PLANET AURAN REGISTRATION

To gain access to the Trainz Download Station as well as the quality Downloadable Content (DLC) items available in game, go to Settings > Internet Tab to register your Planet Auran account. There are currently well over 250,000 items on the Download Station, and more being added every day.

If you do not already have an account, click Join Planet Auran to create your profile. If you have the DVD version, you should also register your Product Key on Planet Auran to provide access to the DLS. If you have the digital version of T:ANE, your store login provides your authorisation access.

NOTE *You must be connected to the internet to register with Planet Auran and to download content*

CONTENT COMPATIBILITY

Our aim is to maintain compatibility across all versions of T:ANE, no matter where you purchased your copy. This means a route created on a Mac can be shared with users of the PC version and vice versa. Similarly, a Simulator Central version of Trainz will be compatible with the Steam Store or Mac Store version when playing multiplayer.

For backwards compatibility, content created in older versions of Trainz (i.e. primarily Trainz Simulator 2009, 2010, 12, Trainz Mac 1 and 2) "should" work in T:ANE, although some modifications may be required.

We recommend that older content is imported from the DLS rather than your local build since this is generally the latest version of the content.

NOTE *Older content won't necessarily look identical or work as expected due to changes in how T:ANE handles certain materials, or new functionality that breaks previous work-arounds.*

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IMPORTING OLDER CONTENT

We strongly suggest you become familiar with T:ANE before attempting to import content created in previous versions.

LOOK More details can be found in the Content Manager section in Chapter 5.

WHAT'S NEW IN T:ANE?

Thanks to the wonderful support of our Kickstarter backers, T:ANE introduces our new custom-built "E2" engine and includes a range of new features never seen before in Trainz. There have also been numerous enhancements to many existing systems. New key features provided are:

E2 GRAPHICS ENGINE
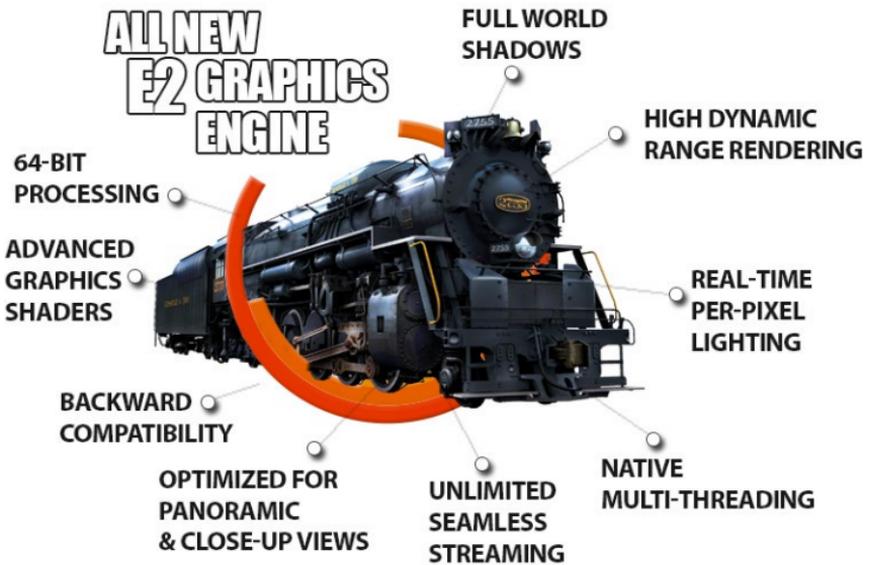
The most noticeable change for existing users is the new graphics engine that powers T:ANE.

In addition to the graphics systems such as full world shadows and per-pixel lighting, the new engine delivers multi-threaded processing to take advantage of modern hardware.

TEST TRACK PHYSICS
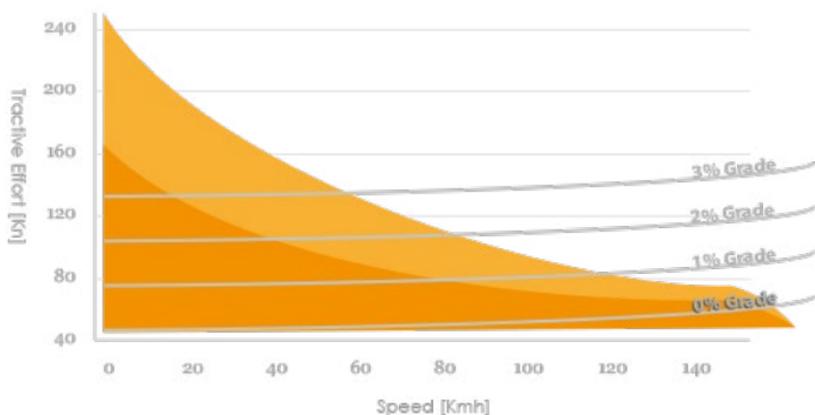
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Test Track is a set of tools designed to allow users to identify, measure and analyse a wide variety of previously "under-the-hood" physics calculations.

Users can also edit the engine files to modify train performance.

(LOOK) Discover more about Test Track in Chapter 6.

PROCEDURAL JUNCTIONS

"Procedural" track is based upon component pieces such as rails, blades, check rails, sleepers and chairs which are then shown on screen. When laying track in Surveyor, you will see all components adjusting in real-time as you move the diverging rail.

Existing spline track can be automatically updated to the new track system simply by using the "Replace Asset" feature in Surveyor. Existing fixed track segments will not be affected, and "old track" is still supported.

TRAIN MOTION

Several new "motion" effects have been implemented to simulate the effects of train suspension based upon track conditions. Trains will pitch and roll as they travel over bumps and on curves.

The track condition can be set to increase or decrease these effects, and individual "bump" assets can be placed directly onto the track to provide additional pitch or roll at specific points.

SUPERELEVATION

Superelevation is special track designed primarily for highspeed trains so they tilt into a corner to avoid excessive sideways force upon the track.

Track can be designated as "Superelevated" and adjustments made to the degree of tilt in Surveyor.

ENVIRONMENT COLLISIONS

Particle effects such as rain and smoke now collide with specified objects and the terrain.

Rain will no longer penetrate tunnels, and smoke will move around solid objects. In addition, other collision physics systems have been enhanced by utilizing "Physx" libraries.

These will be further enhanced over time to improve derailment physics.

INTERLOCKING TOWERS

These towers provide centralised path setting and signal control, improving both safety and through-put of trains across controlled areas.

Towers provide a single point of decision-making with the tower having exclusive control over a linked set of junctions.

The tower forcibly prevents junctions being changed when the track is occupied and also prevents conflicting paths from being set.

NOTE *This feature will be delivered in a free update after the initial release of T:ANE.*

2. MENU OVERVIEW

Trainz offers a variety of ways to access the tools and content contained in the program. This chapter helps you find what you are looking for.

TRAINZ: A NEW ERA LAUNCHER

Once you have successfully installed T:ANE, double-click on the T:ANE icon on your Desktop or at N3V Games > on the Start menu to access the Trainz Launcher menu.

The Trainz Launcher menu provides access to each of the various T:ANE modules:

START TRAINZ

This launches the main Trainz: A New Era module. The first time you click Start Trainz, you are taken to the Tutorials Menu. Once you have completed or chosen to skip the Tutorials, Start Trainz will take you to the main Routes menu.

MULTIPLAYER

The Multiplayer menu lists all the active multiplayer games currently available. Select an active game to join from the list provided.

VISIT TEST TRACK

This will launch the Test Track physics testings and editing module.

LOOK See Chapter 6 for more details.

SETTINGS

Customize your settings for Trainz, including your Planet Auran settings, Display Settings and Advanced Graphics features.

MANAGE CONTENT

This starts the Content Manager module, a utility designed to help you manage your installed Trainz content and to download additional content.

(LOOK) Go to Manage Content Section Chapter 5 for a more detailed description of this module.

PURCHASE CONTENT

This option displays all available "DLC" (Downloadable Content) available. This content can be purchased, downloaded and installed seamlessly without leaving the game.

LAUNCHER MENU BAR
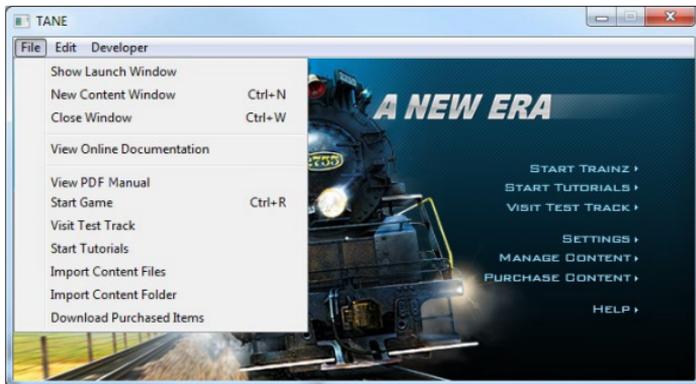
At the top of the Launcher is the Menu Bar. This provides access to window controls, documentation and developer settings.

FILE MENU

SHOW LAUNCH WINDOW

Opens a new window

NEW CONTENT WINDOW

Opens a new Manage Content window

CLOSE WINDOW

Closes the window - also available by clicking the X on the top right of the window

VIEW ONLINE DOCUMENTATION

Opens a browser displaying the Trainz Online community portal where you can access the Trainz Wiki, Community Forums and links to all the latest Trainz related news.

VIEW PDF MANUAL

Opens up the .PDF version of the Trainz manual (i.e. what you are reading now). The Adobe® Reader® application must be installed for you to view the digital manual.

VISIT TEST TRACK

A set of graphical tools to monitor and analyze every aspect of train physics being simulated in T:ANE.

IMPORT CONTENT FILES AND FOLDERS

Use these options to import .cdp files and content folders into Content Manager.

DOWNLOAD PURCHASED ITEMS

Click Download Purchased Items, then click Start Trainz. A new Asset Download window will open (after 10-15 seconds) showing any purchased content that requires downloading. You must have your Planet Auran details entered under Settings > Internet to provide access to your content.

QUIT

To close the T:ANE Launcher click the X button on the top right of the window.

DEVELOPER MENU

This menu provides a range of technical tools related to content and T:ANE developer operations.

(LOOK) The menu is explained in more detail under the Content Manager Section in Chapter 5.

SETTINGS MENU IN DETAIL

Select the Settings from the T:ANE Launcher to customize various elements to maximize your enjoyment.

GENERAL

1 Under this tab you will find a dialogue for adding your Product Key (if required) and selecting your desired language.

INSTALL

2 Details the Trainz: A New Era Installation Path.

PERFORMANCE

3 The performance Tab provides a range of options to adjust performance in T:ANE. For example, the Draw Distance slider can increase your viewing range to many kilometers, but doing so may affect performance.

We encourage you to experiment with various settings until you strike the right balance. Increasing screen resolution will improve the visual quality but may begin to push your hardware beyond its capabilities. Of course, the better your hardware, the better T:ANE will perform.

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INTERNET

4 The Internet Tab is where you can register for Planet Auran, identify your online status and current First Class Ticket status. Planet Auran is an ever growing online community that is free for all Trainz users to join. As a Planet Auran member, there is an incredible wealth of additional information and content available to further expand your enjoyment of T:ANE.

Highlights include:

Access to the Trainz Download Station with hundreds of thousands of free downloadable locos, freight and passenger cars, scenery items, routes, sessions and more.

Online forums (message boards) where you can ask questions, learn from others and share your enjoyment of Trainz.

Interactive online features such as iTrainz Chat; iPortal and Multiplayer.

5 If you haven't already joined, click on the "Join Planet Auran" button to register. This will launch a browser with the Planet Auran registration page that will guide you through the registration process.

TUTORIALS MENU
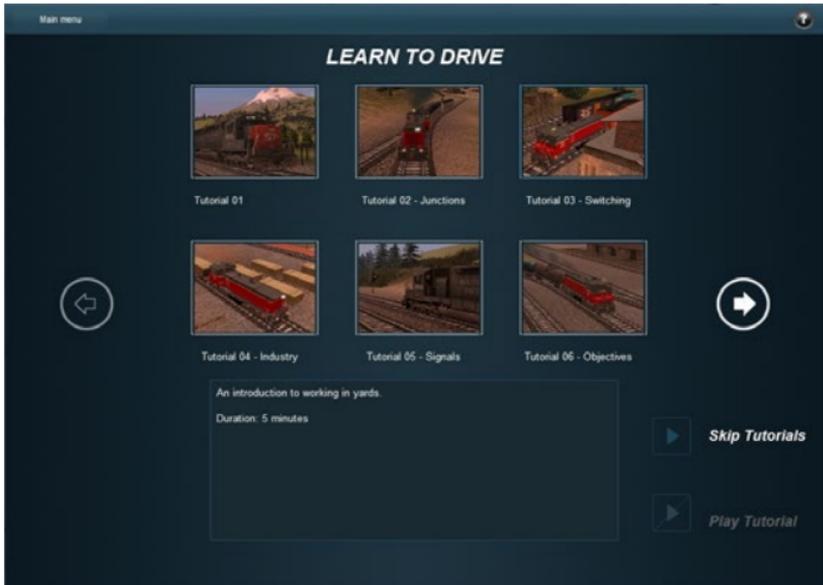
When you first start T:ANE you will be taken to the Tutorials Menu. You can complete these in order or choose to skip the Tutorials and re-access them from Menu Bar > File > Tutorials at any time.

T:ANE includes 10 Tutorials, each focused on a different aspect of train operation in the Driver system.

The Tutorials in order are:

Tutorial 1	Easy Mode Controls.
Tutorial 2	Junctions.
Tutorial 3	Switching.
Tutorial 4	Industry.
Tutorial 5	Signals.
Tutorial 6	Objectives.
Tutorial 7	Realistic Mode.
Tutorial 8	Train Brake.
Tutorial 9	Dynamic Brake.
Tutorial 10	Steam.

We have also included a link to "Tutorials on the Web" which will provide assistance in using the Surveyor and Test Track tools. In addition, the ? icon can be used to open a link to the Trainz Wiki which provides the latest, most up to date information on each aspect of Trainz.

To get started, select the first tutorial and click on Play Tutorial button on the bottom right corner of the screen.

Follow the on screen instructions which explain the in-game functions such as cameras, driving controls and more. You are free to play these Tutorials as often as you like until you are ready to move on to the next Tutorial.

Once you have completed Tutorial 1, carry on through the list to discover more about controlling your trains and operating various aspects of your railroad.

You receive a Tick for each completed Tutorial and you can also track your progress via the Achievements menu.

ROUTES MENU
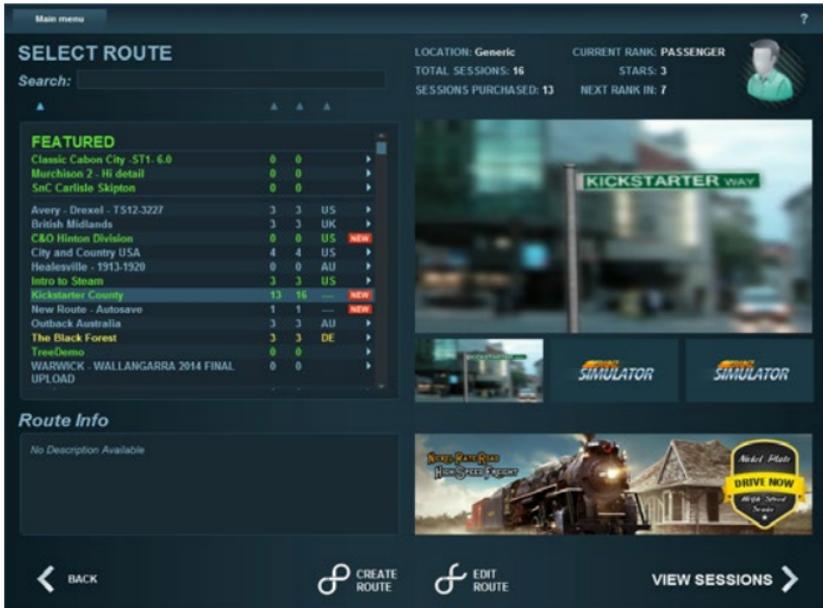
OVERVIEW

Click Start Trainz to open the Routes Menu. This is the central hub where you can access all the Routes and from there, all the related Sessions. It is important to understand these two terms before continuing.

DEFINITIONS

Route	Routes contain the 'world' components including items such as terrain, terrain textures, buildings, track, trees, roads, cars, people and trackside objects. Generally these are things that do not change in the world.
Session	Sessions contain the 'variable' aspects that can change between one driving Session and another. This includes items such as locos, rolling stock, time of day, weather and player instructions.

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Saved Session	A Session you have previously begun playing, and saved part way through.

NOTE *All the Routes and Sessions available are created using the very same tools available to you in T:ANE.*

ROUTES LISTING

There are a number of Routes and Sessions included by default, and of course you can also choose to create your own Routes or Sessions from scratch. It is also possible to create new Sessions using existing Routes, but you cannot edit the "Route" component of any of the built-in Routes.

ROUTE AND SESSION COLOR CODES:

Light Blue	= Installed Content
Green	= Payware DLC
Yellow	= Ready to be installed

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Click on a Route in the list to select it and view a description of the Route in the information pane along with a screenshot of the route.

You can sort the list by clicking on the arrow buttons at the top of the listing. Click again to re-sort in the opposite direction. If the Route is Editable, an Edit Route option will be presented at the bottom of the screen. Built-in and DLC routes are not editable.

Click on the 'View Sessions' button to list the available Sessions for this Route, along with any saved Sessions or active multiplayer games currently running on this Route.

Information about the Session difficulty, the number of Stars you have earned and your current Rank are shown in the top right.

ROUTES MAIN MENU

The Main Menu is found on the Menu Bar in the top-left corner of the screen.

OPTIONS

This is where you can tweak the settings for a variety of systems including graphics, controls and sound. Each of the Options Sub-menus are outlined below.

GENERAL SETTINGS
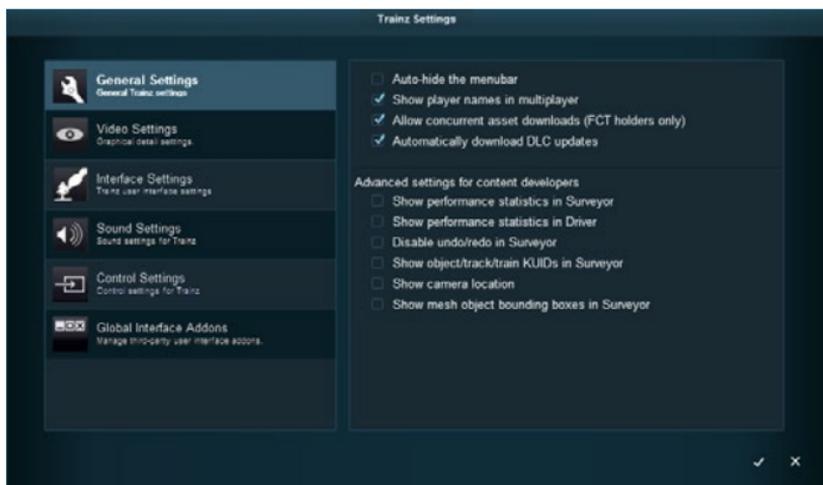
Use General Setting to change when assets are downloaded and determine which additional "content developer" information is displayed on your screen.

VIDEO SETTINGS
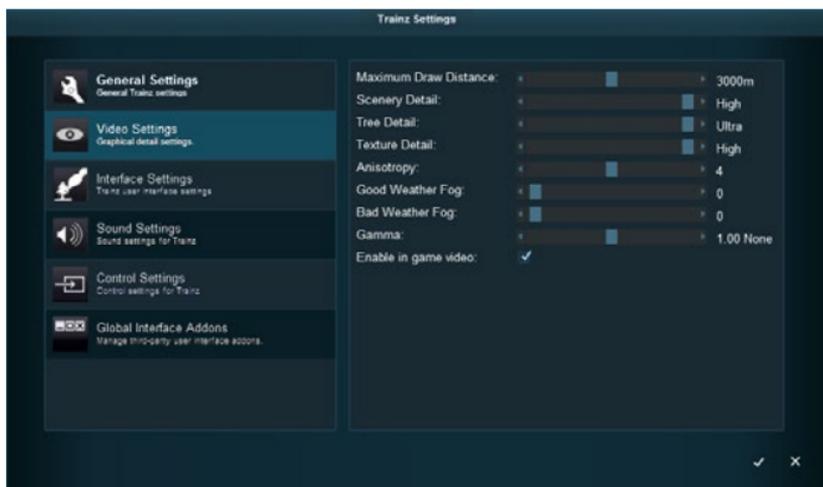
Use these settings to adjust the look and performance of Trainz.

It is important to understand that T:ANE is an open-ended software program that allows users to add practically unlimited objects into a scene. Your computer hardware will determine how well high density scenes are displayed, and what frame rates you can achieve. It is up to you to find a combination of video settings that suit each individual Route and your desired level of performance.

NOTE *You can also adjust other global settings such as your screen resolution, or turning shadows on or off under Settings on the Trainz Launcher.*

Available Video Settings:

Maximum Draw Distance	Sets how far into the distance the terrain is drawn. Higher values will increase the work your computer will have to do and lower the game performance.
Scenery Detail	Adjust the visual quality of scenery objects based upon the Level of Detail (for objects that take advantage of this feature).
Tree Detail	Adjust the level of detail distance for Speedtrees.
Texture Detail	Adjust the detail level of textures throughout the game. Higher values use more RAM and reduce game performance.
Anisotropy	Lower values result in a smoother framerate but sometimes blurry scene. Higher values improve the crispness of distant objects and objects that are on an angle to the observer.
Good Weather Fog	Controls the density of the distance fog effect during fine weather conditions.
Bad Weather Fog	Controls the density of the distance fog effect during rainy or snowy conditions.
Gamma	Adjust the depth of blacks and whites, lowering the gamma will make the simulator appear darker, increasing will make it lighter.

| Enable in game video | Some Driver Sessions may include video content incompatible with your installed video drivers or video codecs. If you find you are having difficulty with in-game video you can use this option to temporarily disable any videos from being displayed. |

INTERFACE SETTINGS
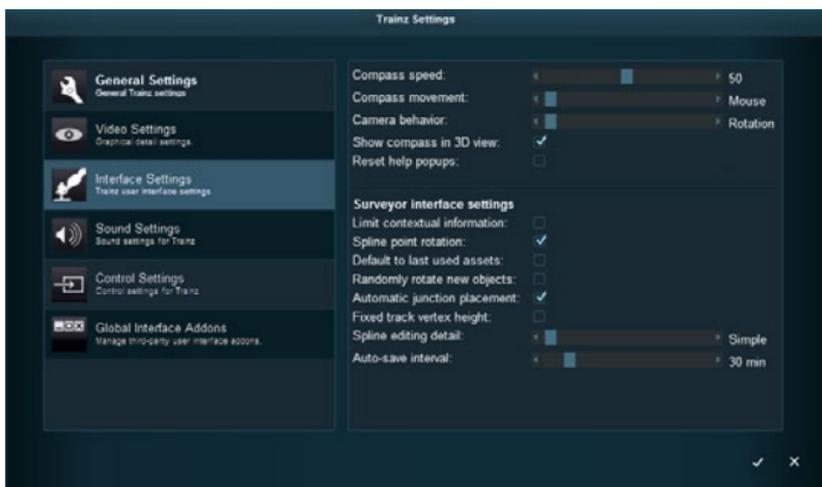
This menu is used to adjust how T:ANE responds to various keys and mouse movements. Available settings include:

Compass Speed	Adjust the Compass Speed slider to the left to slow down mouse navigation. Adjust the slider to the right to travel more quickly over areas of your Route.
Compass Movement	Toggle between default settings and using cursor keys for moving the compass and mouse to move the camera.
Camera Behaviour	Select Panning and the map slides left or right when you navigate around the terrain. Set to Rotation, the map will rotate slightly as you navigate.

Limit Contextual Information	Set to Off and only the graphics relevant to the current Tool Tab are displayed (e.g. Track spline points won't display whilst the Texture tab is open).
Spline Point Rotation	Set to Off turns the white spline point markers from spinning to static.
Default to Last Used Assets	Tick this option to keep the last asset you were using as selected in each Surveyor tab.
Randomly Rotate New Objects	This setting is handy when you are placing forests but you may want to deselect when laying rows of houses.
Automatic Junction Placement	When a junction or "turnout" is created, Surveyor automatically adds a default switch lever.
Fixed track vertex height	Set to On ensures that as you lay track, its height is constrained to the gradient between two spline points. The spline points are also "fixed" at that height so that when you adjust the terrain height, the track doesn't move. You can then use the track laying tools to edit the spline points to your satisfaction.
Spline Editing Detail	This controls the amount of detail visible in spline objects whilst they are being moved around. Improve performance when moving splines by setting this option to Simple. This displays a white line rather than the 3D spline details whilst moving splines.
Auto-save interval	Adjust this slider to increase or decrease the time span between auto-saves while working in Surveyor.

SOUND SETTINGS

Adjust the sound volume, the menu sounds and whether the 3D sound effects are used.

CONTROL SETTINGS
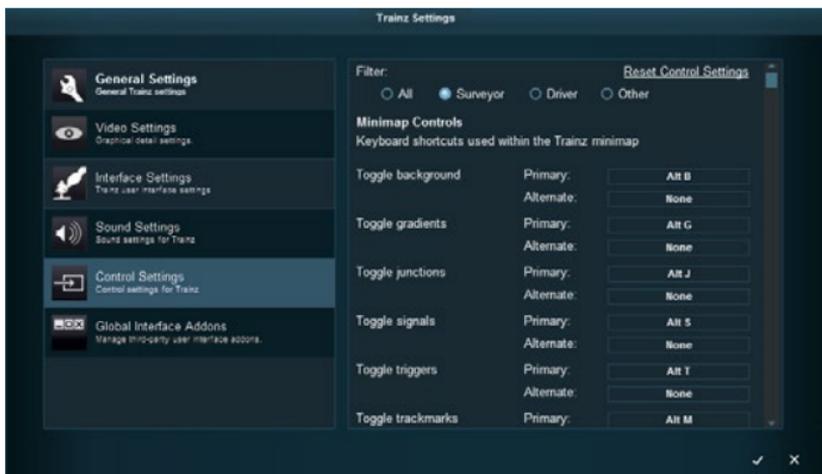
Customize the various hotkeys used throughout T:ANE. Filter controls to include only Surveyor, Driver or Other, then select the menu, tool or function you want to change. Enter the new hotkey then click the checkmark to confirm your changes.

TIP *If a key is already used, it will highlight in red. Change your selection to another key.*

ACHIEVEMENTS
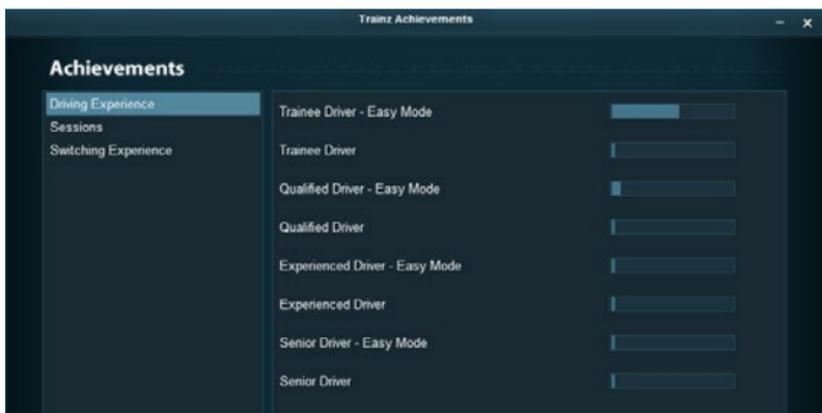
This lets you check your progress towards earning Trainz Achievements which are awarded when you complete Sessions that are configured for Achievements.

TRAINZ A NEW ERA

SESSIONS MENU

OVERVIEW

Access the Sessions Menu by first selecting a Route from the Routes Menu then clicking "View Session".

NOTE *Routes and Sessions are defined previously in the Routes Menu section.*

SESSION LISTING

T:ANE comes with a range of built-in "Driver Sessions", each related to a specific Route. The different style of Sessions available include:

Quick Drive	Use the Quickdrive Tool to set up your own custom Session.
Free Drive	A free-form Session that begins with a range of trains and rolling stock already placed on the track.
Simple Session	Generally a "drive from A to B" type session with instructions to suit all levels of experience.
Complex Session	A more difficult Session aimed at more experienced users.
Multiplayer Session	A sand-box session with overall objectives set by the Multiplayer Host.

Select a Session in the list to view a description of the Session in the information panel.

The relative difficulty and expected duration of a Session is listed above the screenshot, along with any Stars you have earned previously when attempting that Session.

If a Session is Editable, an Edit Session option will be presented at the bottom of the screen. Built-in and DLC routes are not editable, while the Create Session option is available for all Routes.

Click "Drive Session" to begin driving, or "Create Session" to open the Route in Surveyor and begin creating a new Session.

Prior to attempting any of the driving Sessions, we recommend you start with the Tutorials. Once you are confident and looking for more of a challenge, progress on to the built-in Sessions.

SAVED SESSIONS

Any previously saved Sessions show in the list with the time you saved them (or if renamed, the name you saved them with). Click on a Saved Session to see details about the Session such as when it was saved, and how long the Session had run for. Saving a Session is a good way to save your progress on a long drive so that you can pick up again tomorrow where you left off today.

MULTIPLAYER GAME LISTING

If there are any Multiplayer games running on the Route you have chosen, they will appear in the Sessions listing (and also on the Multiplayer Menu).

Click on a multiplayer game to view details of the game in the information pane including the number of current players and the host's game description. Click the 'Join Game' button to join the multiplayer game.

LOOK See Multiplayer page 82 for more information on Multiplayer Sessions.
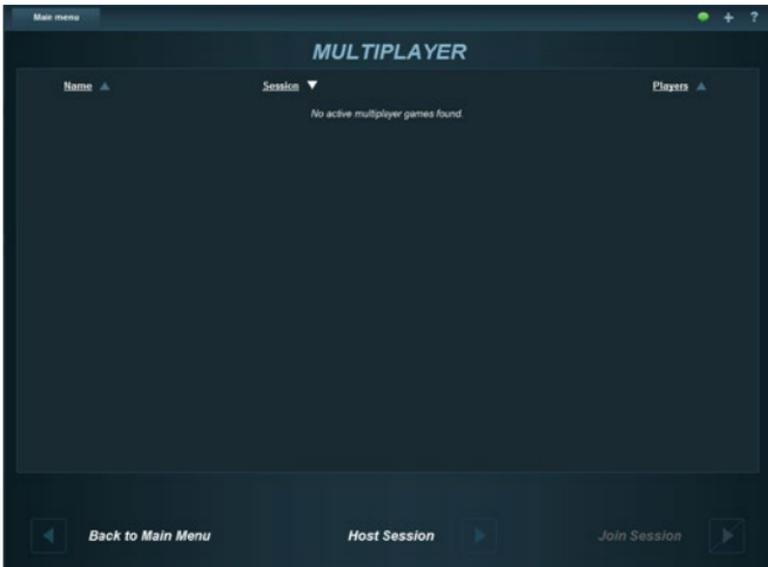
RANKS, STARS AND DIFFICULTY

T:ANE introduces the concept of player progression to Trainz. To increase your Rank, you need to earn Stars. These are earned by completing specific Sessions. Each Session has a scoring system built-in with 5 Stars being awarded for completing a Session perfectly, and 0 or 1 Stars awarded for a lesser performance.
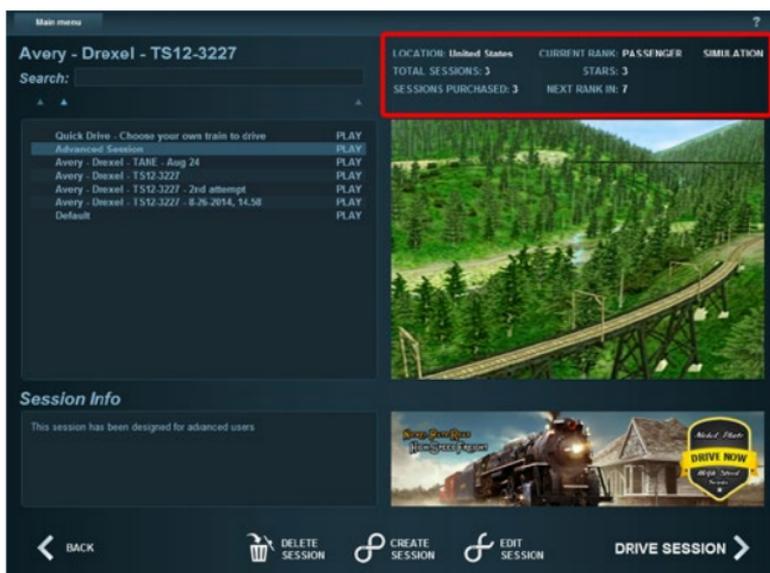
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There is no compulsory element involved with increasing your Rank so viewing this feature is completely optional.

EXIT GAME

Main Menu > Exit Game, will exit T:ANE.

3. DRIVING AND OPERATIONS

Whatever your interest in trains, T:ANE offers a huge variety of different ways to "operate" your railroad.

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CHOOSING YOUR OPERATIONAL MODE

Trainz is more than just a train driving simulation. It is aimed at a broad audience with many different aspects of railroad operations offered. Experiment with the different options available and change your mode at any time.

EASY MODE

The most common mode is the Easy Mode driving controls. A rotary dial provides simple speed controls to make the selected train go faster or slower. Loco power, train weight and track gradient still have an effect on acceleration and speed, but this mode is not a full physics simulation.
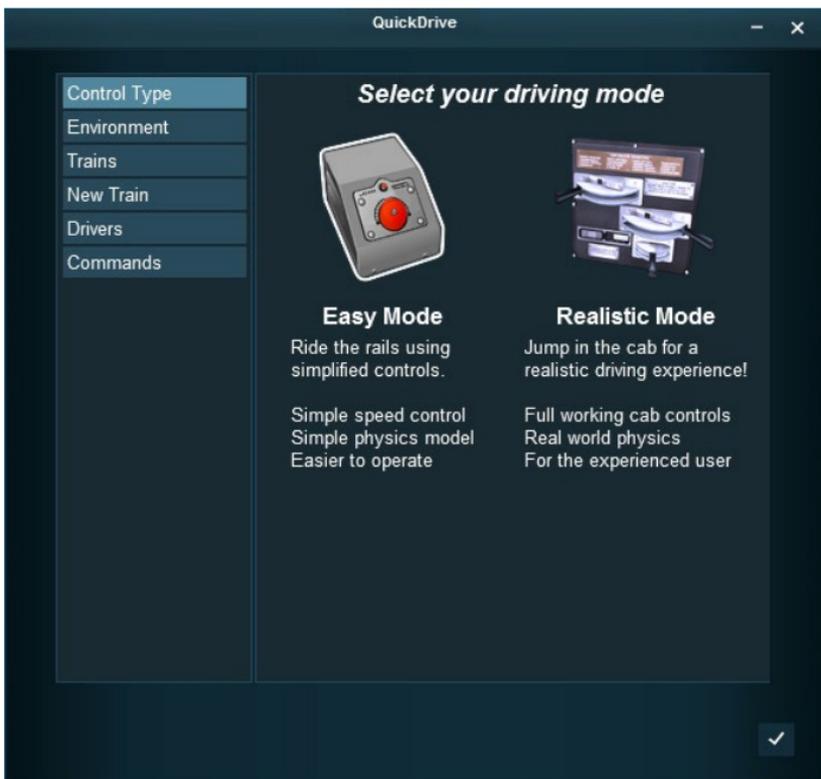
REALISTIC MODE

For the more advanced user, the "Realistic Mode" controls offer a real-world physics simulation with power and braking curves accurately modelled. Users can operate trains like a real train driver using throttle notches, different types of brakes, and for steam locos even operate the firebox and maintain water levels to generate the required steam output.

COMMAND MODE

Rather than controlling an individual train, multiple trains can be "programmed" to follow specific paths or sets of rules by issuing orders or "Driver Commands". The commands can be made on the fly in Driver or set up and saved in a Session in Surveyor. With multiple trains on the tracks, your railroad really comes to life.

SWITCHING YARD

Users can operate junctions manually by changing the direction of the switches. It is therefore possible to carry out complex railyard switching maneuvers by setting out cars for collection and sorting, driving trains and controlling the junctions manually. Junctions are often locked by the session author (or AI passing traffic) allowing users to concentrate on driving not switching.

TIP *Use portals for generating new rolling stock and taking your made-up consists "off map".*

FREIGHT RUN

In addition to driving along the tracks, trains can also interact with trackside industries to load and unload. These special industries have been set-up to produce and receive various commodities and can include animations showing the actual loading and unloading operations.

Interactive assets generate Waybills which require the movements of Commodities from one location to another. This system also provides the opportunity for scored Sessions where a player is tasked to reach a certain goal.

LOOK See Interactive Industries page 73 for more information.

PASSENGER SERVICE

Just like interactive industries, passenger stations can also be set up for the pick-up and set-down of passengers. Driver schedules can be created for the user to follow, and AI drivers can be set up to provide traffic on the route that will make every journey different from the day before- just like in real life.

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IN-CAB VIEW
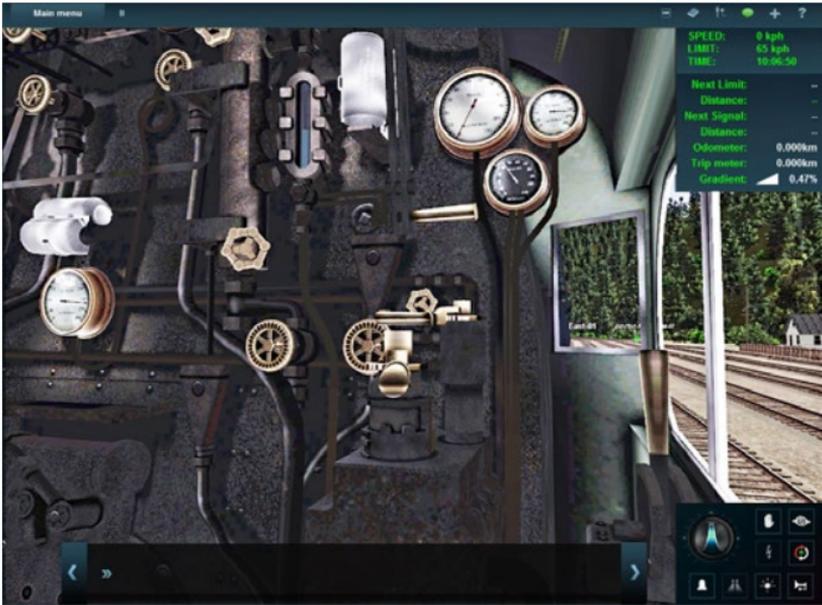
For many people, the view from the cab is the only real choice of perspective. Taking position in the driver's seat, you experience the same limited view of the track as a real driver. Your focus is on the in-cab dials and the track, signals, speedboards and switches ahead.

TRACKING VIEW

While T:ANE does not provide an actual helicopter simulation, it provides the next best thing with the External Camera (Chase or Tracking View). This view attaches your camera to any loco or traincar and provides a "helicopter view" following the train as it travels along the tracks. This delivers a totally different perspective from the in-cab camera where you see only what the Driver would see.

TRAIN ENTHUSIAST VIEW

There are two other, "more relaxing" options to explore the worlds provided. When combined with Driver Commands, it is possible to simply sit back and watch from two different perspectives:

PASSENGER VIEW

For some people, the joy of Trainz (and trains in general) is all about taking a seat and watching the world go by. Click on any passenger vehicle with internal support and press 1 to jump inside. Move your camera using LMB-drag to look around and mousewheel to zoom in and out.
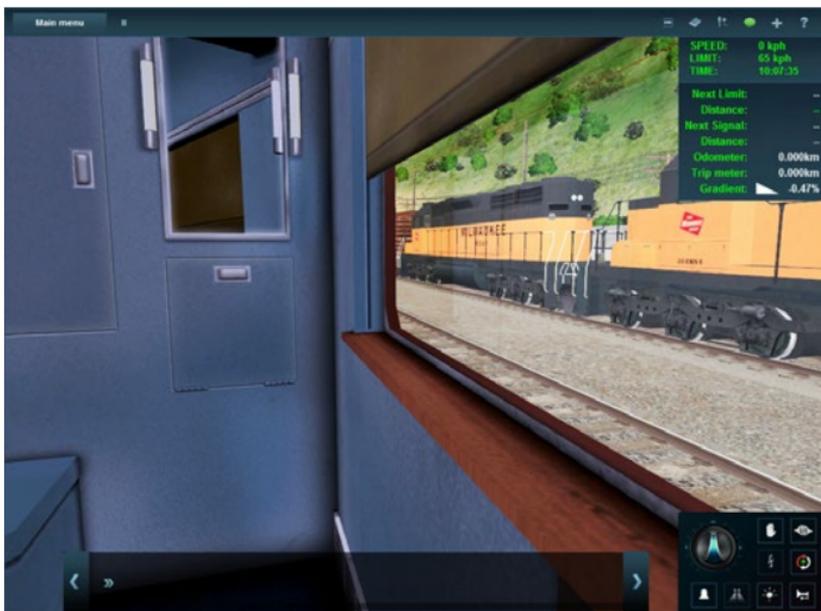
TRACKSIDE VIEW

For other train fans, the thrill of "trains" is about setting up trackside and watching the traffic roll by. In T:ANE, "lineside" or "trackside" cameras can be placed anywhere in the world using the Camera Tools in Surveyor. Cameras are set to either remain Static or to Tracking, to pan and follow the train. These cameras are perfect for the trainspotter.

LOOK See Tracking Cameras page 163 to discover how to create your own Trackside Sessions.

THROUGH-TRAFFIC (PORTALS)

Whilst most driving or operating is within the boundaries of the 3D world contained in a single "Route", by using "portals" and "iPortals" it is possible to transfer trains in and out of the Route, and even from one person to another.

WWW For more information http://online.ts2009.com/mediaWiki/index.php/HowTo/Configure_an_iPortal

MULTIPLAYER MODE

Another option is to participate in Multiplayer sessions with other players from around the world. The only requirements are an Internet connection, a Planet Auran account and an active multiplayer account. Each player must also have the same version of the Route and Session installed, and therefore MP ssessions are limited to built-in or Download Station routes only.

OTHER MODES

Trainz offers so much flexibility that users often find additional ways to use the software that were never even contemplated. One example is using Trainz to create boat simulations or car traffic that operates on "tracks". Use your skill and imagination to discover new uses for Trainz.

DRIVER MENU BAR

This section covers the icons on the Menu Bar to the right of the Main Menu drop-down list.

PAUSE

The Pause button P is located beside the Main Menu button. Click the Pause button again to suspend the current Session and click again to restart at any time.

If you plan to pause for more than a few minutes, consider using the Save Session option instead.

CAMERA VIEWS

The current camera mode is shown on the Menu Bar. Click on the icon to expand the menu allowing you to choose from one of 5 camera modes.
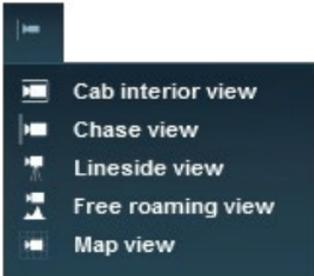
CAB INTERIOR VIEW

To go into Cab View, click on a locomotive then click on "Cab View" in the Camera Menu (or press 1).

To look around the cab, hold the 🖱️ and move the mouse.

Change your viewpoint within the cab by pressing the [and] keys.

Use your mousewheel 🖱️ to zoom in and out to provide a different perspective of the track ahead.

If the locomotive has a second cab, press Alt + C to switch between the cabs.

TIP *Advanced User: You can edit the cab camera positions by opening the appropriate "Interior" config file.*

CHASE VIEW

Select Chase View from the camera menu list (or press 2) to follow the train from the external camera. Use 🖱️ + Drag to rotate and elevate the view, and the mousewheel 🖱️ (or use Page Up Page Down) to zoom in and out.

Press the $-$ and $+$ keys (on the top keyboard row) to move focus to the next or previous car in the consist.

Change the current vehicle in focus by:	Clicking on any train vehicle in the 3D world.
	Clicking the driver selector in the bottom left.
	Clicking on the Consist icons in the 2D Map View.

The HUD or keyboard controls will affect the train in focus (unless the Session creator has prevented control).

LINESIDE VIEW

Click on Lineside View (or press 3) to change your view to the pre-placed camera nearest to your selected train.

If there are no cameras within visual range of the tracked object, the view reverts back to Chase View until the train comes within range of a camera.

LOOK Refer to Tools Tab pg 161 for information on placing your own cameras.

FREE ROAMING VIEW

Select Free Roaming View (or press 4). This mode operates the same as navigating in Surveyor.

Click in the 3D world to move to that location. Click and drag just above the center of the screen to move forward. Click and drag higher up the screen to move forward faster.

Use the cursor keys to rotate or change elevation. Zoom in and out using the mousewheel (or Page Up Page Down).

Zoom out all the way to "satellite" altitude at which point the view transitions into a Map View with label controls for various objects in the scene.

51
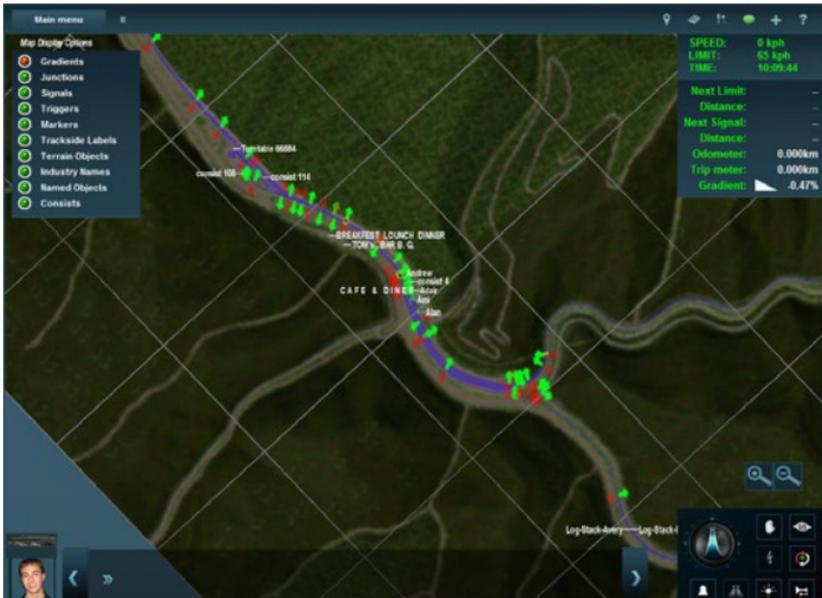
MAP VIEW

Click on the Map View menu item, [M] to display a 2D (top-down) map view. This view provides an overview of the overall track layout, where your trains are on the tracks and checking turnout directions and signal states.

Map View shows the position, length, and name of each Consist, the direction set for each turnout and named assets for assets such as turnouts, industries and stations.

The map follows the movement of the currently selected Consist which shows as green. All other Consists show as gray. Click on one of the gray Consists to centre the Map view on that Consist.

Click 🖱 on a point on the map to re-centre the map view to a new location and removing focus on your selected train.

Exit Map View by choosing another camera mode (or [M]).

USER RULES MENU

This menu provides access to the QuickDrive Tool.

LOOK

ADDITIONAL TOOLS MENU

The tools menu provides access to many functions that are useful when driving in a Session:

TOGGLE SESSION INSTRUCTIONS

Click on this to toggle the Session instructions on or off.

SHOW COMMODITY PICKER

Displays the commodity picker. LOOK

SHOW WAYBILLS

Shows available waybills from participating industries on the Route. LOOK

▤	Toggle session instructions
◆	Show commodity picker
▤	Show waybills
▥	Toggle schedule information
◀	Show message window
?	Hide junction overlays
?	Show vehicle names
▯	Switch to imperial units
▾	Dim headlight
▾	Bright headlight
▭	Sound Horn
▮	Start ringing bell
◉	Reverse train facing
⤴	Enable decouple mode

TOGGLE SCHEDULE INFORMATION

Displays the schedule (if applicable to the Session).

SHOW MESSAGE WINDOW

Displays system messages about the movements of trains throughout the Route.

HIDE JUNCTION OVERLAYS

Toggles visibility of junction names and direction arrows. Use mouseover to view junctions when toggled off.

SWITCH BETWEEN IMPERIAL/METRIC UNITS

Toggles between Imperial and Metric speed/brake pressure units.
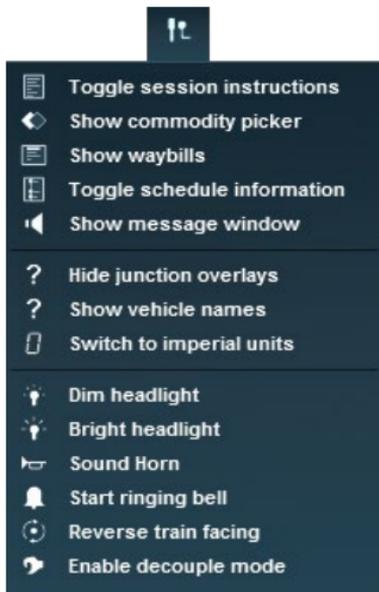
DIM HEADLIGHT

Changes the headlight between full, dim and off.

BRIGHT HEADLIGHT

Changes the headlight to a bright state or if already bright, turns headlights off.

SOUND HORN

Activate or deactivates the locomotive horn or whistle.

RING BELL

Activate or deactivates the locomotive bell.

REVERSE TRAIN FACING

This toggles the direction that the train considers forwards.

ENABLE DECOUPLE MODE

Displays a red icon over each of the available couplers.

ITRAINZ CHAT
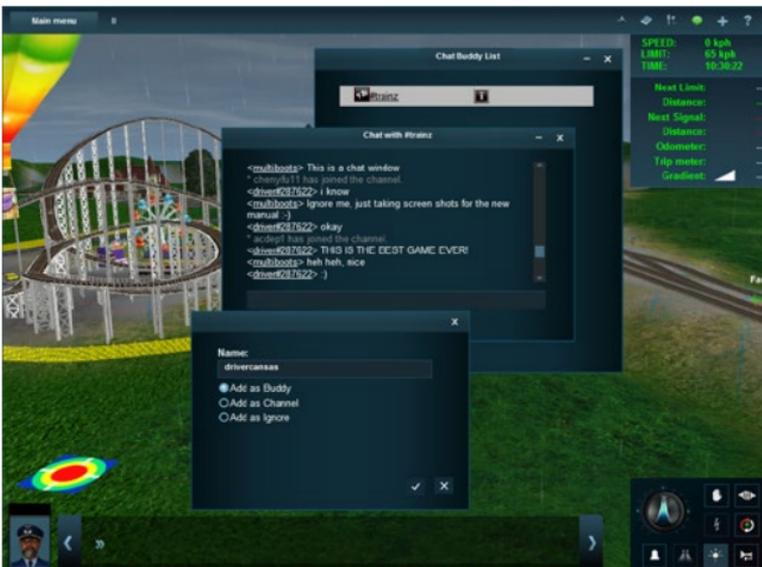
To chat with other Trainz fans, click on the iTrainz Chat icon in the top right of the menu bar across the top of the screen.

This opens the Chat Buddy List. Click on #trainz to open the general Trainz chat channel. Begin typing and press the Enter key to 'publish' your words for others to see.

You can create your own chat channels, add Buddies and also ignore users. Ignore will stop you from seeing any comments from that person but they will still be able to see your comments.

This icon changes color to show that you are online, or if there is a message waiting.

Requires a Planet Auran username and password entered in the main options screen accessed from the Launcher.

HELP MODE
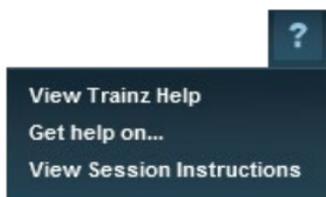
Click on the ? then select "Get Help On". Now click on any tool or menu and you will be taken to the appropriate Trainz Wiki page. (Requires an active Internet connection).

View Trainz Help
Get help on...
View Session Instructions
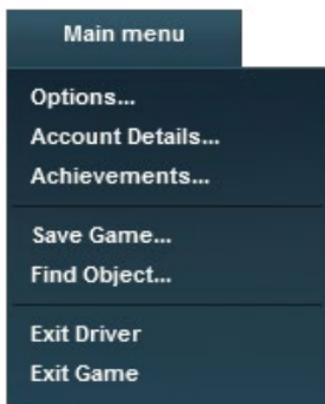
DRIVER MAIN MENU

The Driver Main Menu is found on the top left of the Menu Bar. The Options, Account Details and Achievements sub-menus are also accessible from the Routes Menu and within the Surveyor Mode. In Driver, you have three additional choices explained below.

Main menu

Options...
Account Details...
Achievements...

Save Game...
Find Object...

Exit Driver
Exit Game

SAVE GAME

Click Save Game (or **Ctrl** + **S**) to save the current state of the Session including train location, train control settings and speed, junction directions, and the state of each industry. The Saved Session will then appear in the list in the "Sessions" menu. Select the Saved Session to reload and pick up again from where you left off.

Save Driver Session   ✕

type your save game name here

Avery - Drexel - TANE - Aug 24
Avery - Drexel - TS12-3227 - 2nd attempt
Avery - Drexel - TS12-3227 - 8-26-2014, 14.58

✓   ✕

Note: Certain "Rules" may not save the current "state" of every session element and therefore restarting the Saved Session may not work exactly as anticipated in all cases.

FIND OBJECT
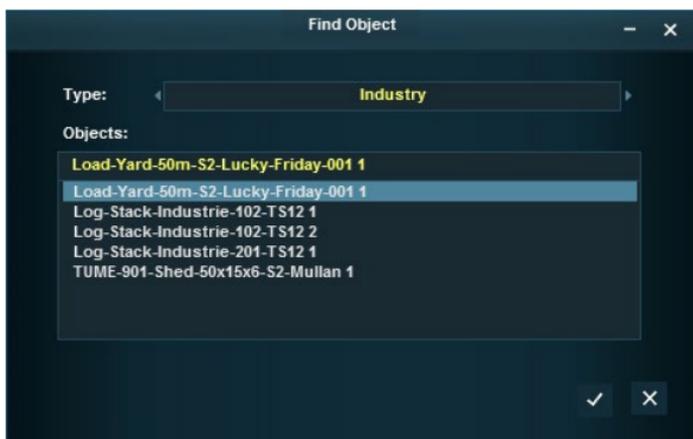
To locate a specific named item on the map such as a junction, station, loco or interactive industry, click Find Object or **Ctrl** + **F** . 57 Selecting an item from the list will move the camera position to that position on the Route.

Choose from the drop down list to filter items of a certain type only. Click on the item to move the camera to that location, then click on the Checkmark to exit the Find Object menu.

EXIT DRIVER

Esc Click Exit Driver to quit the current Session and go back to the Routes or Sessions Main Menu or Surveyor Module, depending on where you loaded the Session from.

You will be presented with the option to save the Session before exiting.

QUICKDRIVE

INTRODUCTION

QuickDrive is a Session mode that provides a configurable set of options to create a customised Session without using Surveyor.

The QuickDrive Rule can be accessed from within "Driver" from the User Tools on the Menu Bar, or while in Surveyor by clicking on the QuickDrive icon on the Menu Bar (**Ctrl** + **F2**).

Each Route also has a "QuickDrive" session by default with a selection of route-specific locos and rolling stock already placed for your convenience.

TIP *QuickDrive can be accessed at any time during a Driver Session which has the rule enabled.*

CONTROL TYPE

Switch between Easy and Realistic control methods by clicking on the appropriate image.
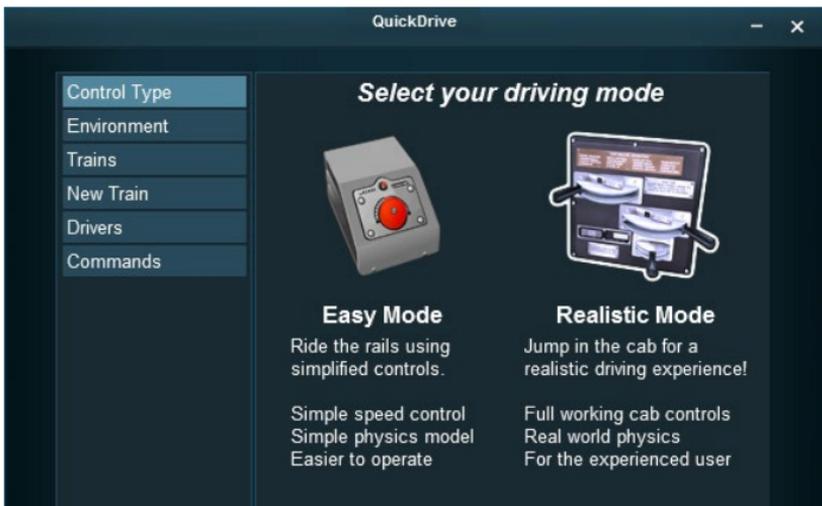
ENVIRONMENT

Here you can change the weather type, time & date, game rate and derailment realism.

59
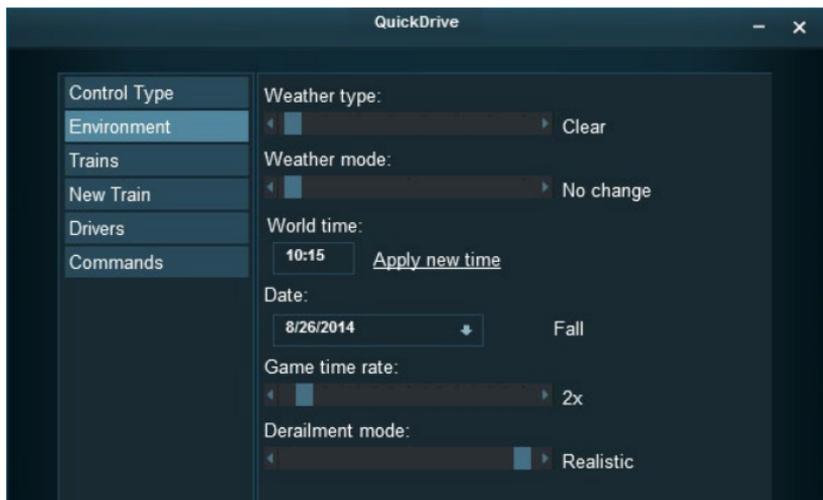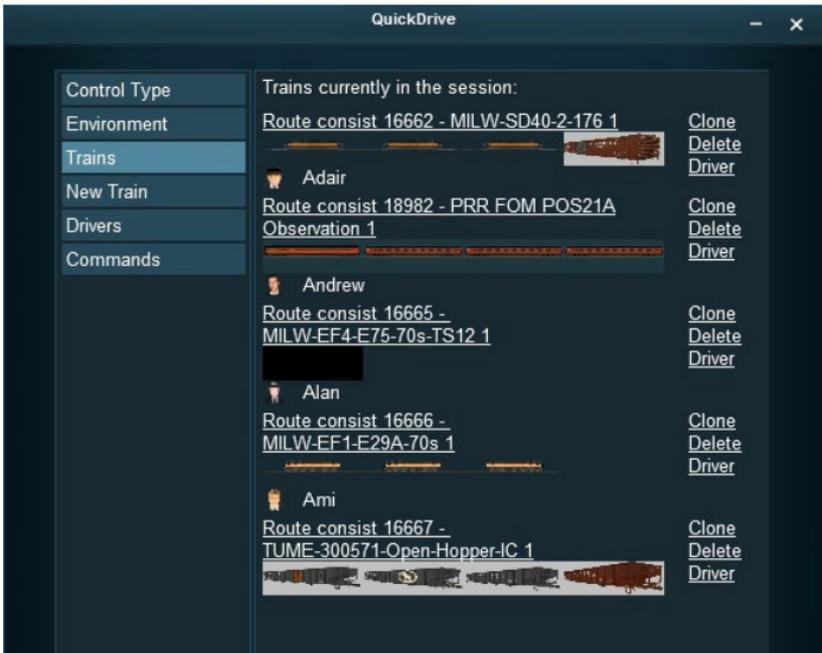
TRAINS

Click on "Trains" to view a list of trains or "consists" on the Route. You can then:

Clone	Place another instance of the same consist.
Delete	Requests confirmation before deleting the consist.
Driver	Assign a driver from the list to the consist.

NEW TRAIN
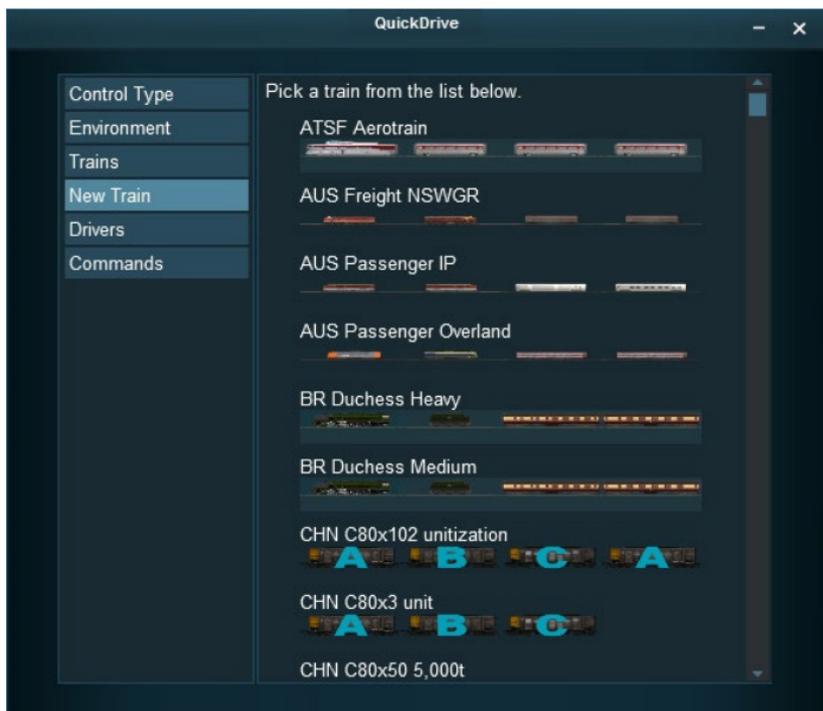
Click on "New Train" to display the consist management options. Click on the consist of your choice then click on the track to place the train.

You can also reverse or delete the consist you have placed.

DRIVERS
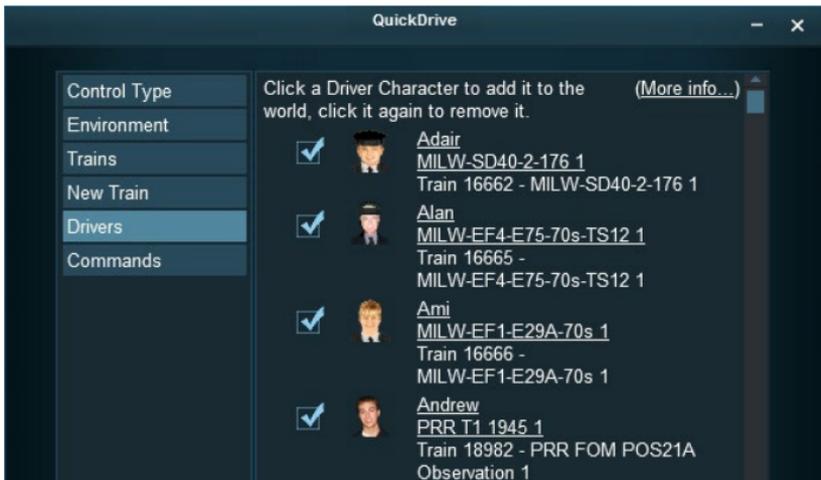
Here you can appoint various drivers for the Session by clicking in the box beside each driver.

COMMANDS
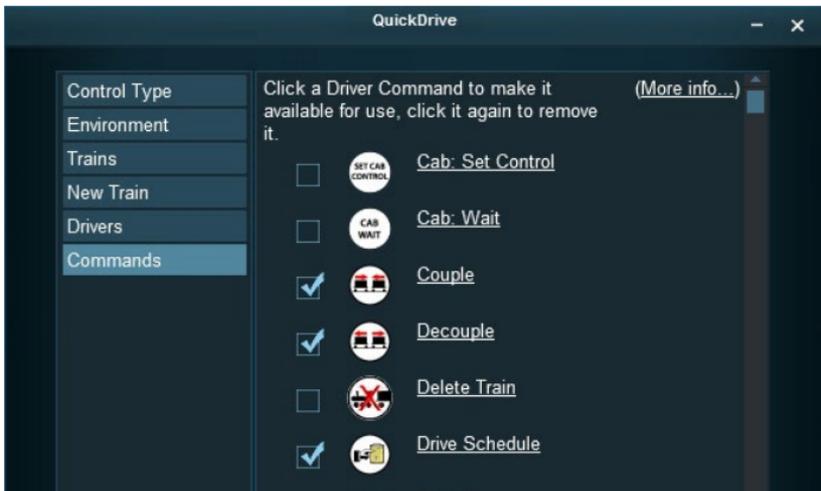
Use this menu to select the commands you would like to be available for AI Drivers in the Session.

OPERATING YOUR RAILROAD

This section explains how to use the various controls required to drive trains and operate your railroad.

BASIC LOCO CONTROLS

Most sessions (and Quickdrive) provide a choice of Easy or Realistic Controls.

In Easy Mode, a simple rotary dial speed controller is available in the bottom right panel of the HUD. This dial controls the movement of the currently selected train.

+Drag the dial clockwise to move the train forward. Dragging the dial so the arrow points vertically upwards will cause the train to slow down and stop. Dragging the dial anti-clockwise from vertical will move the train in reverse.

Click on a position of the dial will move the dial instantly to that location.

TIP *Even using the Easy Mode controls, trains can take a long time to speed up and slow down. A heavy train will take much longer to stop than a light train.*

HOTKEYS:

S	Stop	Tap S to quickly set the dial to "Stop" and bring the current consist to a halt.
W	Forward	Tap W to move the control clockwise.
X	Reverse	Tap X to move the control anti-clockwise.

TIP *Whilst in Driver, you can use either your mouse or Hotkeys to drive and the controls are active whenever you have a train selected. Free Roaming Camera will lose focus of your train.*

In addition to the movement controls, the Loco Control HUD provides a number of other train controls:
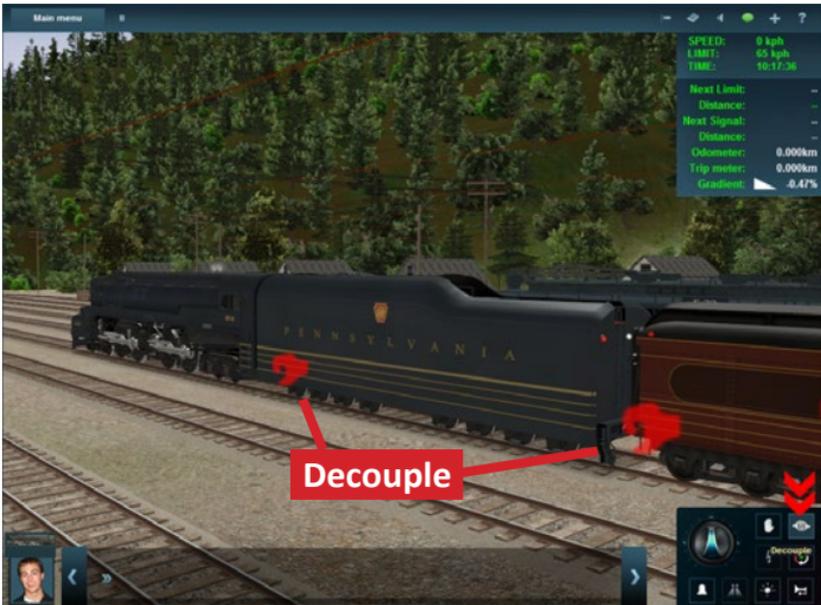
Decouple

DECOUPLE

To decouple traincars, click the Coupler button to display a series of red icons which appear at each coupler location in the 3D world. Click on the red coupler icon where you want to make a break in the train.

PANTOGRAPHS

Click on the Pantograph button on the right of the throttle to raise and lower them or press the `End` key on the keypad. If the locomotive has multiple pantographs subsequent key/button presses will raise them individually or together before cycling back to all down.

REVERSE TRAIN FACING

If your locomotive has two cabs, or two control desks in the same cab, you can click on the Reverse Train Facing button to change to the other cab. This can also be done from Cab Interior View only using `Alt` + `C` .

BELL

To activate or deactivate the locomotive bell, click on the bell button or press `B` .

DITCHLIGHTS

To activate or deactivate the flasher for the ditchlights, click on the ditchlights button, or press `;` .

LIGHTS

To activate the headlights, click on the Light button. The lights will cycle through off, dim and bright settings. You can also control the headlights using `L` , which will switch the lights on and off. `⇧ Shift` + `L` will change between dim and bright.

HORN

To operate the horn or whistle, click on the Horn button to the right of the throttle control on the HUD. For long blasts of the

horn, simply hold the [H] key down longer or click 🖱 + Hold on the Horn button. Some horns may have a set length, and will play for the same duration each time.

NOTE *Your locomotive may not be fitted with some of these options.*

In Realistic Mode the controls include Reverser, Throttle and a selection of brakes specific to the particular loco you are driving.

66
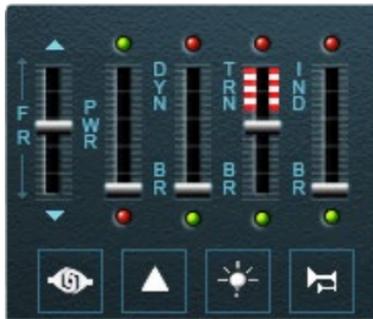
The Cab Mode HUD also offers a similar range of additional controls such as coupler, lights and horn, but adds a new control for the Sander.

SANDER

 This is used to gain extra traction when wheelslip is occuring.

LOOK Detailed instructions for Realistic Mode are provided in Driving In Cab Mode page 85 and page 100.

DRIVER COMMANDS

1 In addition to trains being driven by direct control, each train can be controlled by an "Artificial Intelligence" (AI) Driver. This is achieved by issuing "Driver Commands" via the Command Interface.

2 To issue a Command, choose a Driver then click on the double blue arrow icon on the Command Display.

3 Choose a command from the list and the Command icon is

added to the display. Repeat this process to issue multiple orders.

4 To re-order your list, drag and drop an icon between two existing icons, or click on the "down arrow" to insert a new Command. Drag an icon off the list to remove it.

5 View a description of each task by moving the mouse over the Command icons.

TIP: If a Command you require isn't in your list, click on UserTools > QuickDrive > Commands on the Menu Bar. Tick the boxes to add more Commands.

NOTE▶ *Driver Commands can be also be issued using the "Edit Session" Rules menu when creating a Session in Surveyor.*

PLAYER INSTRUCTIONS

A number of additional in-game options have been provided in T:ANE to ensure clear instructions and guidance throughout a Session.

NOTE▶ *Session authors can access the Navigation Point and Objective tools in the Session Rules Menu.*

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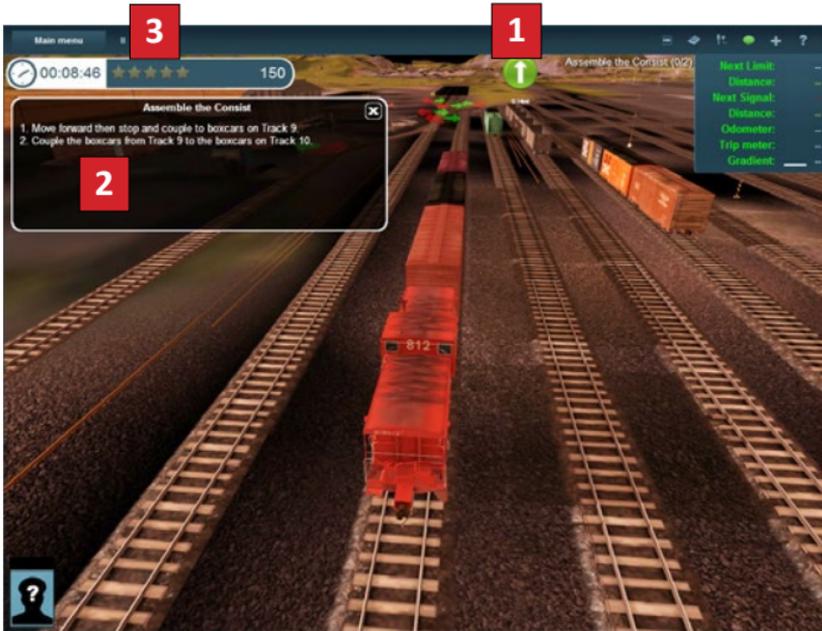
1 NAVIGATION POINTS

"Navigation Points" (often called Nav Points) are icons visible in the 3D world. Nav Points are set by the Session Creator and can be attached to trackmarks, triggers or traincars. The icons provide a visual cue for the user to follow while in their Driver Session. Nav Point icons indicate the type of task the user is being asked to perform and provide the "as the crow flies" distance and direction to the destination.

Basic Nav Points include:

Proceed Forward	Proceed Left.
Proceed Right	Stop.
Turnaround	Load.
Unload	Couple.
Decouple	Passenger Stop.

2 OBJECTIVES

Objectives are a bit like "quests" in a role playing game and are used to inform players of their current tasks. Several Objectives can appear at one time or they can viewed or displayed sequentially. Click on the Objective in the top right next to the Speed HUD to view more detailed instructions. Once each of the listed tasks are completed, the Objective will disappear.

3 SESSION SCORING

Players can earn "Ranking Points" within a Session for completing various tasks, or lose points for poor performance such as arriving late, taking too long, or going the wrong way. All these systems are controlled by the Session author.

4 RANKED SESSION

A Ranked Session awards Stars based upon how well the Session was completed. Stars are then accumulated and earning more Stars will increase a player's Rank. The Current Rank is shown in the Routes and Session Menu. A Ranked Session also provides a Timer with a choice of Countdown or Elapsed time, and a "Completion" screen that shows the number of Stars awarded.
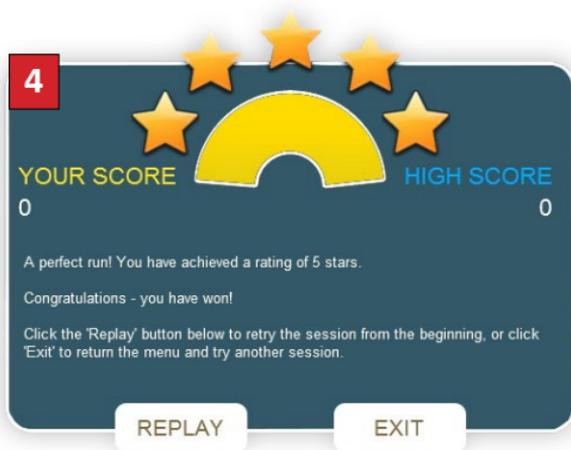
SWITCHING JUNCTIONS

Change the direction of the Turnout by clicking on the green and red arrows. The green arrow shows which track the train will follow when reaching the turnout.

If you are in the Cab, hold the **Ctrl** key when you click or use **J** to change the junction ahead. Use **Ctrl** + **J** if you are reversing.

TIP *It is always a good idea, and courtesy (especially if in Multiplayer) to change junctions back to the main line.*

LOOK Junctions overlay can be toggled on/off from the Additional Tools Menu, see page 53.

You can also change turnouts in the 2D Map View [M] which is useful for planning your train's movements well in advance of its progress. Keep in mind the position of other trains on the Route when setting up junctions far away.

TIP *Click anywhere on the arrows to change the turnout direction. Changing your camera position may help select the correct angle when many turnouts are close together.*

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TURNTABLES AND TRANSFER TABLES

Click the curved arrow to rotate the turntable in the required direction. The turntable will slowly rotate and stop lined up to the next track segment. Click again to rotate to the next track segment.

Once the table is lined up with the required track, drive the loco slowly onto the table. Stop in the middle making sure the train is clear of both ends, then rotate the turntable to the track you want to depart on. Pull slowly off the turntable to continue on your path.

COUPLING & DECOUPLING

To activate decouple mode, click on the Decouple icon **Ctrl** + **D** , then move your cursor over the couplers between train cars until you see a red decouple icon. Click to decouple the consist at this point. The red coupler icon then opens and a message is displayed on the screen.

Decoupling creates a new consist and your camera remains focused on the same car or loco as before the decoupling operation.

To re-couple, ensure that you are operating at speeds below 5mph (8kph). Experiment with different camera positions to make this task easier.

PASSENGER STATIONS

Interactive Passenger Stations "produce" and "accept" passengers much like the Interactive Industries produce and accept Commodities. To pick up or drop off passengers, you first require a passenger car that is capable of accepting passengers, and then you must stop next to the platform of an interactive station.

Ctrl + 🖱 on a passenger car to see the current number of passengers in the car and **Ctrl** + 🖱 on the Station to see how many passengers are waiting to be picked up.

INTERACTIVE INDUSTRIES

An interactive industry involves one or more input and output queues that designate which Commodities are accepted or generated by the industry and the speed at which these queues operate.

Ctrl + 🖱 on an industry to bring up the Commodity Levels menu. This display shows the current levels of the input and output queues and also how long until that queue is empty or full.

To load or unload at an interactive industry, stop a compatible vehicle at the loading/unloading position. Some industries allow moving slowly past the loading/unloading position.

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WAYBILLS – WHO NEEDS WHAT

To see which industries require Commodities, click on Additional Tools > Show Waybills. The Waybill list shows a list of Commodities in the left column. Click on each Commodity Icon to see which industries require those products for delivery.

Waybills are automatically produced by an industry when that industry reaches a percentage of capacity of a particular commodity. Once the full amount required by the Waybill has been delivered, the Waybill is deleted from your list.

COMMODITIES

You can allocate which commodities are carried by a particular item of rolling stock. Click on the 'Show Commodity Picker' entry on the 'tools' menu to bring up the Commodities Menu.

Click on the Commodity icon, then click on an item of rolling stock and an icon will appear showing that car is now limited to carrying only that type of Commodity. You can only assign commodities to vehicles built for carrying that type of commodity.

To stop any commodity being loaded or unloaded, use the "Stop" icon. To allow the default load only, use the "Default" icon.

UNDERSTANDING SIGNALS

Both human and AI drivers must obey all signals in Trainz (although human drivers may choose to ignore the signals at risk of an accident with oncoming traffic).

Trainz signalling is currently a basic block signalling system, but there is a large amount of flexibility built in to allow customized signal systems that reproduce many of the different types found around the world. Many signal systems convey similar information in very different visual ways. Color light signals, semaphore signals and position light signals have different ways of showing these aspects.

Typical indications are as follows:

LINE CLEAR (GREEN)

The next signal is either green or yellow. Green means it is safe to proceed at line speed.

CAUTION (YELLOW)

The next signal is red. Yellow means proceed with caution but be prepared to stop at the next signal.

STOP (RED)

The block is occupied, terminates, or is closed. Bring your train to a complete stop before reaching the Red signal.

ADVANCED CAUTION

On densely used track or where line speed is high, a fourth aspect (Advanced Caution) may be used to give advance warning to trains that they have to slow down.

This would be used between Line Clear (green) and Caution (yellow).

Note: Only one type of signal lights shown, there are many types used throughout various countries but the function remains the same.

DIVERGING ROUTE

Signalling can also give an indication of which direction a junction is set.

These signals are showing the diverging route is set, and you will need to be travelling at mid speed. The exact interpretation of 'mid speed' is railroad specific, but is often 30mph or thereabouts. The signal doesn't specify left or right - just that the Route you are taking is not the mainline Route.

This signal is showing the left hand diverging Route is set. It doesn't specify how fast the junction should be taken - in this case this information would be given by a separate speedboard with a left hand arrow on it near the junction.
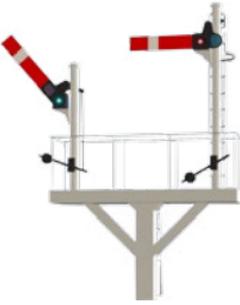
This signal is showing the Route to the left is set. The highest signal is the mainline Route. Any signal arms mounted lower indicate that a lower speed limit applies to that Route. The exact speed is not specified directly - that information would be provided by a speedboard.

AUTOMATIC & CONTROLLED SIGNALS

A controlled signal is generally used to protect one or more junctions or other track features. Controlled signals show Stop by default, and only clear to a Proceed aspect in the presence of a train.

An automatic signal shows Clear (green) by default unless the track is occupied or blocked ahead, when it will display the appropriate restriction.

"STUCK" SIGNAL

There are many possible reasons why a signal won't clear. You can get a hint about why a signal is showing a specific state by hovering

over the signal with your mouse cursor. The tooltip that appears explains why the current state has been set. You can also Click on the signal to move the camera to any obstruction (e.g. a train in advance of the signal).

Some common messages displayed include:

No path to selected destination	There is no possible track path available to the destination (even though you think there might be). It is possible that a junction lever is missing, the track is broken, direction markers prevent travel on a required track segment or perhaps the track simply has no connection to the current track.
A train is blocking or approaching this junction lever	Your train is blocked due to another train on the tracks competing for the same junction. You cannot proceed until the track is clear. Identify the train that is competing for the signal and determine whether you will wait for it to proceed, or adjust the schedule of either your train or the train that is blocking your path.
An AI train has control of this junction lever	An AI Driver has a "permit" for that lever. The train will maintain the permit (lock) on the lever until it has crossed the junction or the current schedule has been abandoned.
Manual control is disabled for this junction lever	The Session author has prevented manual control of the lever.

PASSING A SIGNAL

When a train encounters a green light, it is permissible to pass the signal at normal speed. The signal will change to red once the block in advance of the signal is first occupied (i.e. the train has passed the

signal and travelled the length of the overlap distance). It will not change to caution (yellow) until the train has completely vacated the block in advance of the signal (i.e. the back of the train has passed the next signal by the length of the overlap distance).

UNDERSTANDING AI DRIVERS

OVERVIEW

The AI drivers in Trainz follow a series of specific behaviours. They do exactly as they are "told" (which is sometimes not what the user thinks it should be doing). It is best to provide specific instructions using commands such as Drive To Trackmark and Wait to guide them. This section provides more information as to how the AI Driver operates, and how to troubleshoot any problems that arise.

DRIVER NOTIFICATIONS

1 Click Additional Tools > Show Message Window to show messages relating to the AI Drivers.

TRACK OVERRIDES

Specialised trackmarks can be set to override the "logical" track layout.

Track Priority	AI trains will follow a Track Priority setting that matches their own Priority setting, but only if that route is available. If not, they will chose a different priority track. Use Trackmarks as waypoints, or Direction Markers to prevent a train using a specific track.
Track Direction Marker	These markers will prevent any AI train from ever traveling in the "wrong" direction.

SOLVING AI PROBLEMS

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Option 1	Use the signal blocked messages to find a train blocking your path
Option 2	Use "Abandon Schedule" then "Continue Schedule" to get the AI to recalculate the path and potentially free up a locked junction
Option 2	Use "Abandon Schedule" then take manual control to sort out the bottleneck (possibly by moving a train onto a different line, for example)

NOTE ▶ *To avoid the same problem again, edit the session in Surveyor adding additional Commands or Rules.*

TIP ▶ *Pause the game while figuring out and making changes.*

MULTIPLAYER

Multiplayer introduces a new level of interactivity to the Trainz environment. Just like on a real railroad, the safe passage of several trains requires the co-operation of railroad staff.

With real people working each train, operational possibilities of online Sessions are virtually limitless!

JOINING A SESSION

Active multiplayer Sessions appear below the regular Session list or in the Multiplayer Menu. Select a multiplayer Session and click Drive Session. A multiplayer-specific connection dialog is displayed before Driver begins loading.
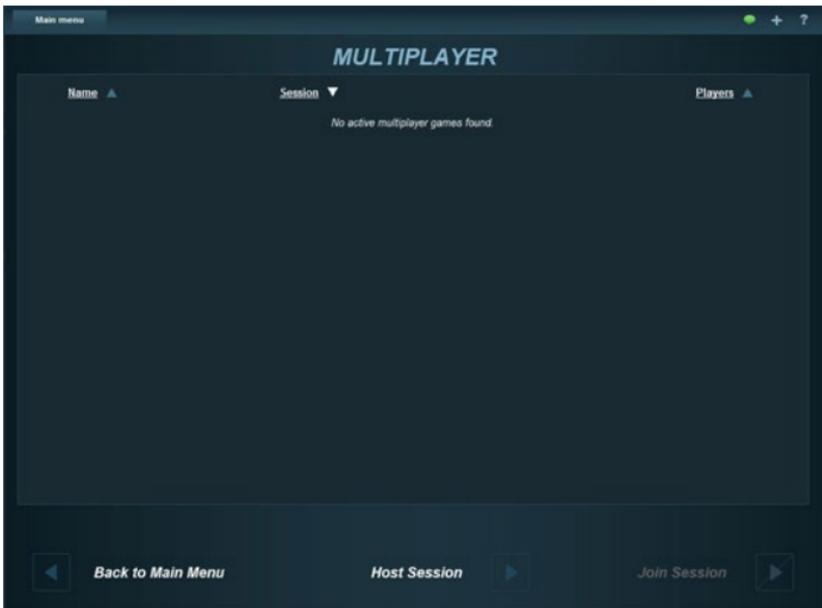
If you don't have the latest content required for the selected Session you will be prompted to download the updates and automatically launch you in to the game.

When the game loads, a list of players currently in the game is displayed. Click on "Choose a Driver" to see a list of available drivers and trains in the Session. Click on an "eye" icon to view the train location on the map, and then click on the arrow button next to the driver of your choice to select that train. You are now in charge!

CHAT DURING A SESSION

A special chat channel is visible which allows communication between Multiplayer participants. Session admins and officers are denoted in the chat and you should take care to follow their directions. They have the power to kick you from that Multiplayer Session if you are being disruptive. Don't be afraid to ask for advice regarding Trainz Multiplayer or the specific Session that you have joined.

GAMEPLAY

You can control one or more Drivers in Multiplayer. An AI Driver is assigned to each train, so you can control a train either through issuing Commands to the Driver, or by driving manually. Only one player can control a train.
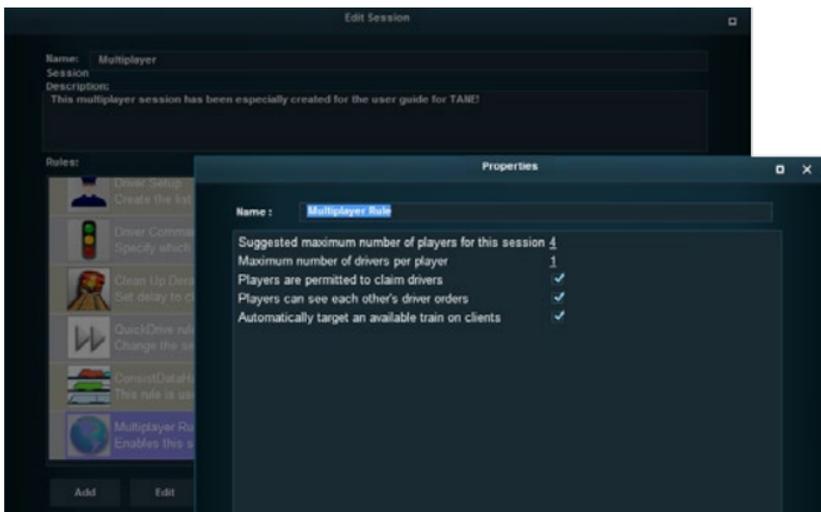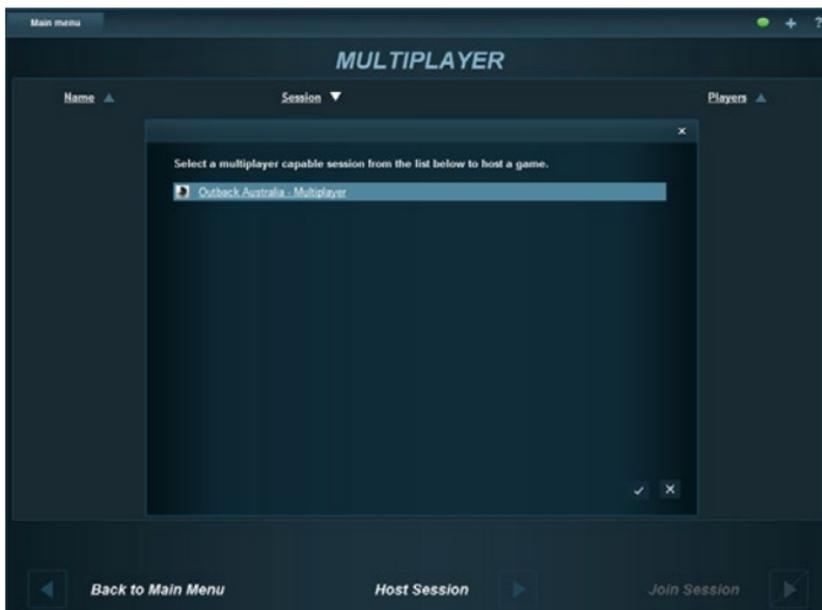
HOSTING A SESSION

We suggest before hosting your own multiplayer Session you take some time to familiarise yourself with the Route and to participate in a few sessions as a player.

Load a Multiplayer Session, give your Session a short, descriptive name and choose Private or Public. Click "Start Session" to begin the multiplayer Session and to list your Session in both the Session Menu and Multiplayer Menu.

Assign a Driver to joining players by clicking in the player list and choosing "Assign Driver...". Let your participants know what you'd like them to do, and away you go. As Admin, you can also promote or kick players by clicking on their portraits and selecting the relevant options.

NOTE *To ensure absolute integrity, Multiplayer requires any content used in a Session is available on your computer in unmodified form. Trainz will automatically revert any modified content and (if necessary) download the latest version from the DLS.*

DRIVING IN CAB MODE - DIESEL/ELECTRIC

INTRODUCTION

This section provides in depth instructions on how to drive Diesel or Diesel/Electric locomotives in the "Realistic Mode", also commonly called Cab Mode. This provides a realistic driving experience with a full physics simulation of the various forces at work. This includes locomotive performance such as the power output at each "notch", length and weight of the train, track gradient, track curvature, air resistance, brake power and more.

NOTE *In-Cab SS4 Locomotive shown. Cab interiors and lever positions vary for each locomotive.*

We also recommend you play through the Cab Mode Tutorials for in-game assistance in discovering the finer points of Cab Mode driving.

IN-CAB CONTROLS

Many of the controls within the locomotive cab can be adjusted using your mouse. These controls are identified by a tooltip that shows when you hover your mouse over the control. The types of in-cab control available to the cab creator include levers, switches, analog and digital dials, lights and even slidable windows.
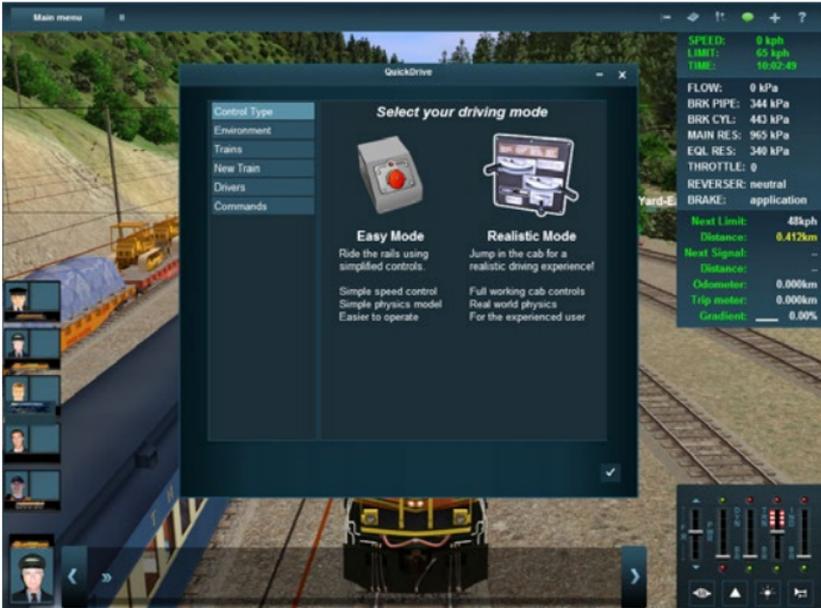
You can also use the Hotkeys or Driver HUD to carry out the same function. This means you can control your loco in a variety of different ways including external camera view.

LOOK T:ANE aims to deliver the most realistic driving simulation experience possible. See Test Track in Chapter 6 for more information on measuring and adjusting the power output of your loco and analysing all aspects of the physics calculations performed while driving.

MOVING FORWARD: EASY AS 1-2-3

To get your loco moving, simply follow these three basic steps:

Step 1:	Release the train brakes $\boxed{Q}$. Note: if the brake cylinder has not emptied, you may need to also release the independent brake $\boxed{D}$.
Step 2:	With the throttle in Neutral, move the Reverser into Forward by pressing $\boxed{F}$ or dragging the Reverser lever in the 3D world.
Step 3:	Increase the throttle $\boxed{W}$ slowly and the train will begin to move forward.

SPEED:	0 kph
LIMIT:	65 kph
TIME:	10:02:49
FLOW:	0 kPa
BRK PIPE:	344 kPa
BRK CYL:	443 kPa
MAIN RES:	965 kPa
EQL RES:	340 kPa
THROTTLE:	0
REVERSER:	neutral
BRAKE:	application
Next Limit:	48kph
Distance:	0.412km
Next Signal:	--
Distance:	--
Odometer:	0.000km
Trip meter:	0.000km
Gradient:	0.00%

Monitor the HUD (Heads up Display) which shows your current speed, brake and throttle settings, and other important information such as distance to next speed limit and signal, signal status and track gradient .

Continue reading to discover more in depth information on the controls, and also how to slow down and bring your train to a halt!

REVERSER

HOTKEYS = $\boxed{\text{F}}$ / $\boxed{\text{R}}$

The tooltip text in the Cab Interior View for the Reverser is "reverser lever". The Reverser position determines the direction the train will travel relative to the cab with the driver (especially important to remember in dual cab locomotives).

The Reverser has three settings:

Forward	Move the Reverser lever into the Forward position or press $\boxed{\text{F}}$.
Reverse	Move the Reverser lever into the Reverse position or press $\boxed{\text{R}}$.
Neutral	Move the Reverser lever into the Neutral position (no default hotkey).

The Neutral position disengages any tractive effort regardless of throttle setting. The locomotive should always be stopped before changing the reverser setting to the opposite direction.

TIP *You cannot change the position of the Reverser unless the Throttle is at the idle position.*

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THROTTLE

HOTKEYS = W / S / X

The tooltip text in the Cab Interior View for the Throttle is "throttle lever".

In Cab Interior View select the required throttle setting by moving the throttle lever to the required notch position.

Notch 0 = no tractive effort

Notch 8 = maximum tractive effort.

W	Increase the Throttle one notch.
X	Reduce the Throttle one notch.
S	Set the Throttle to Notch 0.

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MANAGING THE THROTTLE

Correct use of the throttle depends on various factors such as the type of locomotive, the weight and length of the train, the severity of grades and weather conditions.

For each throttle position, a definitive maximum load current and corresponding tractive effort is generated. The increase of tractive effort as the throttle is moved from one position to the next is immediate. Since the total tractive effort of the standard diesel locomotive is divided into eight steps (available at the eight throttle notches), it is necessary to advance all the way into the last notch in order to develop full tractive power. It is good practice to hesitate at each notch position, to allow the engine to come up to the new run speed, and to prevent slipping.

1 The Load Indicating Meter or Ammeter provides the best guide for throttle handling when accelerating a train. By observing this meter, it will be noted that the pointer moves to the right (increased amperage) as the throttle is advanced. Thus for maximum acceleration without slipping, the throttle should be advanced one notch each time the pointer begins moving back toward the left, until full power is reached in notch 8.

TIP *The worst treatment that can be given to a traction motor is to allow it to stand at "stall" for any appreciable length of time with load current applied to it.*

It is therefore important, that once the brakes are released and that the train slack is out, to start the locomotive to move as quickly as possible, accelerating to a speed that will bring the load meter pointer down in a minimum of time.

TRAIN SLACK

When starting off, it is good practice to advance the throttle promptly to a notch that will start the train moving. Once you get moving, you may need to back off the throttle once all the slack is out in order to maintain desired speed.

When decelerating, it is also important to consider the action of slack running in and out on the train. Always avoid reducing the throttle from high power to idle before allowing traction motor voltage to decay (reduce).

Pressing $\boxed{\textbf{S}}$ is only intended for emergency use as the surge caused greatly increases the risk of drawbar or coupler failure (along with a very uncomfortable ride for your passengers).

WHEELSLIP

Power is required to get a train moving, but too much force will cause an event called "wheelslip". With steel wheels sitting upon steel track, there is very little friction between the two surfaces. Increasing the throttle too quickly will generate too much power causing the wheels to spin or "slip". This wheelslip is indicated by the throttle setting on the HUD flashing. If you do begin wheelslipping, move the throttle back using X .

TIP *Watch the information in the Cab HUD Panel to get information on speed, throttle, brake settings and Reverser direction.*

SANDING

HOTKEYS = V

If you are having difficulty to get your train moving you may need to apply sand. This increases the level of traction. Don't forget to turn the sanders off once you are underway!

BRAKING

Slowing and/or stopping a train can be quite a challenge in cab mode. There are three different brake systems available and each one has a specific purpose:

Independent Brake	This applies the brakes on the locomotive only providing effective stopping power for a locomotive without a train, or for a light train moving slowly.
Train Air Brake	This applies brakes down the entire train by using compressed air to apply the brakes. For a long train it can take a very long time for the air to reach the last cars.
Dynamic Brake	these brakes use the locomotive's own engine to power their application which means that they are quick to respond, and will generate a lot of force to slow the train. They become ineffective at low speed and are ideally suited for controlling speed when descending hills. Not all locomotives have a dynamic (or regenerative) brake fitted.

INDEPENDENT BRAKE

HOTKEYS =   E / D

The Independent Brake as the name suggests is independent of the main train braking system. It is used to apply braking force only on the selected locomotive.

NOTE *Not all locomotives have an independent braking system.*

In Cab Interior View, the independent brake lever has a continuous range from fully off (red range) to fully on (green range). Set the Independent Brake by moving the independent brake lever across this range.

NOTE *This differs from the Cab Mode Control HUD, which shows Green for "Go" (brakes are off) and Red for "Stopped" (brakes are on).*

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In keyboard control mode the Independent Brake is set by pressing the   E   key. However, this only toggles the Independent Brake between being fully on or fully off. Use the HUD or Lever to make smaller adjustments.

TIP *Set additional hotkeys in Main Menu > Options > Control Settings.*

Application of the Independent brake takes some pressure away from the Main Reservoir and the Brake Cylinder pressure will rise. Remember this brake only applies to the locomotive and not the rest of the train. It is not effective for a heavy train.

INDEPENDENT BRAKE BAIL

HOTKEYS = [D]

The Independent Brake Bail can only be operated from the keyboard by pressing the [D] key. It immediately vents only the locomotive brake cylinder without affecting the braking effort on the rest of the train.

If the Train Brake or the Independent Brake is applied when you use the Independent Brake Bail, the locomotive Brake Cylinder will fill again with air and rise in pressure. This is mainly used to "stretch" the train by allowing the locomotive to "run away" from the rest of the train. This stretches the train to the limits of the couplers and reduces strain.
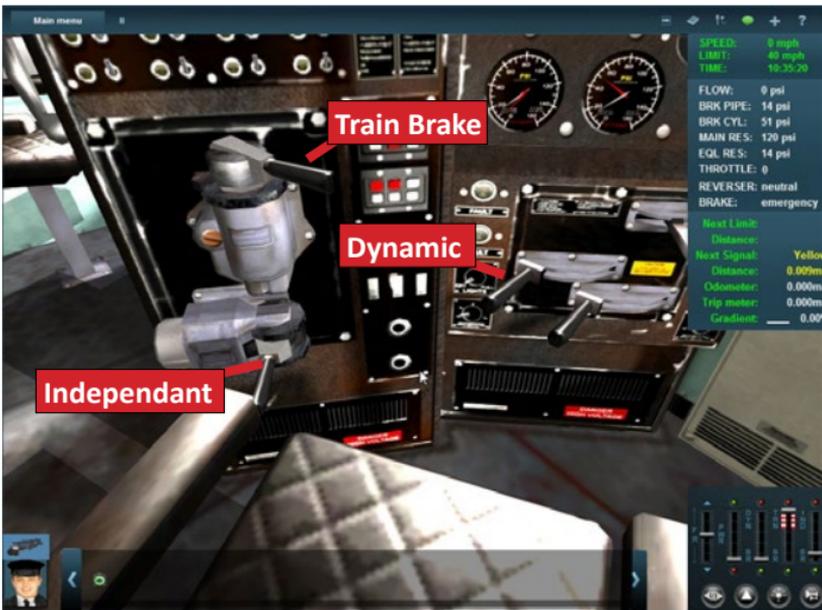
TRAIN BRAKE

HOTKEYS = [**Q**] / [**A**] / [**Z**]

The tooltip text in the Cab Interior View for the Train Brake is "trainbrakelap lever".

A standard air brake handle has "Release", "Lap" and "Apply" positions. Learning how to operate the Train Brake is critical in controlling the speed of your train.

⛔ *Be careful with repeatedly releasing and re-applying the brakes in quick succession. You will soon empty the air reservoir leaving you with no way of applying the brakes until the reservoir recharges.*

RELEASE

Select the Release setting by moving the trainbrakelap lever into the "Release" position [**Q**]. This opens the main reservoir conenction to the brake pipe, raising pressure in the pipe and thus releasing the brakes.

While motoring, the main reservoir gently maintains brake pipe pressure to counteract any leaks in the system. Leave the handle in the Run/Release position while motoring.

APPLY

To begin applying the brakes, move the handle to "Apply" [**A**] position. This releases air from the brake pipe to the atmosphere and in turn this causes the brake cylinders to apply pressure to the wheels.

Note: Also use the [**A**] *key to apply handbrakes to consists without locomotives to prevent them from rolling away.*

LAP

Watch the equalizing reservoir when making a brake application. When the pressure has decreased by 10-30 psi, move the handle to "Lap" [**Z**]. This shuts off the flow of air from the main reservoir into the train pipe, and closes the connection to the atmosphere that is

made during a brake application.

The brakes will slowly apply down the train to the requested level. How hard the brakes apply is controlled by how long the lever was left in the "Apply" notch.

Gradually the Brake Pipe pressure will stabilize at the same pressure as the equalizing reservoir. A heavy freight train can generally be slowed by a Brake Pipe reduction of 10-psi, a fast moving passenger train can require heavier reductions of up to 30-psi.

A full application or "equalization of pressures" occurs at 64-psi for a 90-psi train pipe such as that in use on the F7 diesel.

SLOWING A LONG TRAIN

The brakes of a long train will take more time to react, as changes in pressure must be transmitted by the train pipe to every vehicle in the consist. The brakes will be held at this level until the handle is moved to the release/run position, when air will flow from the main reservoir into the brake pipe and the brakes will gradually release.

The Flow Gauge serves as a guide to air movement within the Brake Pipe. A reading above zero indicates that the brakes are either in the process of application or release or are otherwise venting air somewhere in the consist.

TIP *Think of filling up a bucket to store power (Apply) and then pouring it out to apply the brakes (Lap); the more water you put in the bucket, the more you have to use.*

SELF-LAPPING BRAKES

Modern locomotives are fitted with Self-Lapping brake systems, which shut off the flow of air automatically when a reduction is made. A Self-Lapping brake handle has a range of Apply notches which will automatically lap the brakes at specific braking levels. This means you don't have to wait in Apply for a set period of time, but simply move the lever to the level of braking you want.

Just like the standard air brake, you can apply the brakes further (by moving the lever further), but you cannot partially release the brakes. You must fully release the brakes in order to re-apply them.

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TRAIN BRAKE OPERATION

This Westinghouse or 'Automatic' airbrake is the standard braking system used since it was introduced by George Westinghouse in 1869.

It has endured with little modification to the present day and T:ANE currently considers all the vehicles to be fitted with Westinghouse equipment regardless of era or region.

The system is based on a pressurized air pipe connected to reservoirs on all the vehicles in the train. Simply put, a pressure reduction in the pipe results in airbrake application while a fully pressurized brake pipe results in brake release.

The makes the Westinghouse system "failsafe"; when pressure is released, the brakes are applied. A brake application can be actuated by anything from an emergency application, a burst hose, a derailment or a wagon being decoupled from the train.

FLOW - BRAKE PIPE FLOW
The Flow field displays the movement of air in the train Brake Pipe. It should return to zero before attempting to move away from a standstill, as flow indicates that the brakes have not released on all vehicles in the train.

The Flow Gauge is the only true indication of system equilibrium when viewing from the cab, as Brake Pipe Pressure is measured at the locomotive. If the Flow Gauge pointer is bouncing it means the brakes on the train are still in the process of applying or releasing.

BRAKE PIPE - BRAKE PIPE PRESSURE
The Brake Pipe field displays the pressure in the Brake Pipes. Flexible hoses connect the Brake pipe (or Train Pipe) between vehicles in the train.

The Train Pipe is fed by the Main reservoir. The maximum pressure is maintained by a feed valve. Over use of the airbrakes can deplete the air in each vehicle's auxiliary reservoir more rapidly than the brake pipe can recharge them, resulting in runaways.

BRAKE CYLINDER

The Brake Cylinder field displays the pressure in the Brake Cylinders of the currently selected locomotive/car. Each car is fitted with one or more brake cylinders. A piston inside the cylinder moves as a result of pressure changes in the train pipe. The piston's force is transmitted via rigging to brake blocks or discs at the wheels.

Since a pressurized cylinder results in brake application, a reading of 0 Brake Cylinder pressure indicates that the brakes are released on the locomotive.

The Brake Pipe Flow Gauge and the Train Pipe Pressure Gauge are the driver's means of estimating brake cylinder pressure at the rear of a train.

If there is any brake cylinder pressure showing on the gauge or HUD, the brakes have applied on the vehicle you have selected. By selecting a vehicle toward the rear of a long train, you can see how much longer it takes for the brakes to apply at the back of the train.

EQUALIZER - EQUALIZING RESERVOIR

The Equalizer field displays the pressure in the Equalizing Reservoir. This overcomes the difficulty of setting the brakes to a desired level on a long train.

Small changes in train pipe pressure will not display correctly on the gauge until the pressure has stabilized along the length of the train (since brake pipe pressure is measured at the locomotive).

When applying the brakes, air will vent from the Equalizing Reservoir. A relay valve detects pressure reduction and discharges air from the brake pipe until its pressure is the same as that of the equalizing reservoir. This serves as a guide for the driver as to how hard the brakes will apply.

EMERGENCY BRAKE

HOTKEYS = [Pause Break]

Select the Emergency setting by moving the trainbrakelap lever into the "Emergency" position or by pressing the [Pause Break] (Pause Break) key. Like the service position, this allows air to escape into the atmosphere, though using Emergency, the air is vented from the system more rapidly so the train will stop more quickly.

DYNAMIC BRAKE

HOTKEYS = [W] / [S] / [X]

The tooltip text in the Cab Interior View for the Dynamic Brake is "dynamicbrake lever". Locomotives that are fitted with dynamic brakes can control the braking power by using the power of the locomotive.

100   To activate the Dynamic Brake, ensure the Throttle is set to Notch 0, then move the Dynamic Brake Lever fully into the green range [C] . Use the Throttle Lever to increase the power output of the loco and control braking effort.

To deactivate the Dynamic Brake move the Throttle Lever [S] to Notch 0. Then move the Dynamic Brake lever fully into the red range [C] . The Dynamic brake is now inactive and the Throttle will once more control tractive effort.

Emergency Brake

Independent Brake
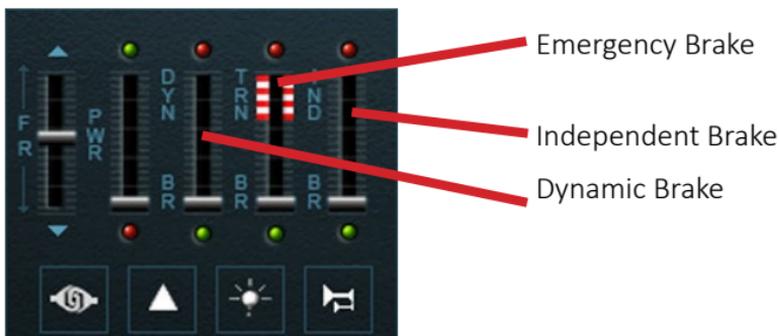
Dynamic Brake

DYNAMIC BRAKE OPERATION

The Dynamic Brake is a means of reducing locomotive speed by an electrical system, which converts the traction motors into generators. The operation and effect of this system applies braking power only to the locomotive(s). Power required to rotate the generators through gearing on the wheels and axles retards the locomotive's travel. Current generated by the traction motors is dissipated in resistance grids located in the engine hood of the locomotive.

The grids are cooled by motor driven fans that are powered by a portion of the current generated. Although similar in effect to an independent air-brake application, Dynamic Brake is fully electrical; it does not produce friction between brake shoes and tires, thus avoiding heat and wear on these parts. The load indicating meter shows the current generated by the traction motors and may be compared in effect, with a brake-cylinder pressure gauge.

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Dynamic braking is valuable in many phases of locomotive operation. It is particularly valuable when descending grades, though it can effectively be used to retard train speed while coming to a halt if desired (10 mph minimum), reducing the necessity for air brake.

Advance cautiously through the braking range until desired braking effort has been reached. The amount of braking strength available varies with train speed, and with the throttle in notch 8 continues to rise, as the speed decreases until reaching its maximum value at around 20 mph. It is permissible to start from a standstill on a downgrade with Dynamic Brake applied.

When braking a heavy train on a severe grade, the maximum available braking effort may not be sufficient to maintain desired speed. An application of the Train Brake may be used in addition to the Dynamic Brake, in order to maintain permissible track speed.

DRIVING IN CAB MODE - STEAM

INTRODUCTION

Entering the cab of a steam locomotive for the first time, you will find that the light-up crew will have prepared you a nice hot fire. Fire temperature can be gauged by looking at the color of the firebox; an orange fire is relatively cool, and a white-hot fire is required to raise the necessary pressure to power the locomotive.

Your task as driver is much more than setting a throttle. You need to learn how to best convert cold coal into hot coal which then turns water into steam to raise the boiler pressure which will in turn drive your loco forward.

The following sections provides all the information needed to make this happen- and with some practice, you will be running a full head of steam in next to no time!

PREPARING TO MOVE

Check the gauge pressure either in the cab or on the Cab HUD Panel to see that your pressure is close to the nominal pressure.

LOOK See Boiler Pressure page 104 for more information.

REVERSER **F** / **R**

The tooltip text in the Cab Interior View for the Reverser is "reverser lever". The Reverser (also called "cut-off") determines the steam Cutoff and has a range of -75% to +75%. Negative values indicate the valve gear has been set to select reverse movement. When ready to pull away, release the brakes (**Q** , same as for a diesel or electric loco) and use **F** to move the Reverser to full forward 75% Forward cutoff.

Whistle Chord

Steam Chest Pressure

Reverser Lever

Speedometer
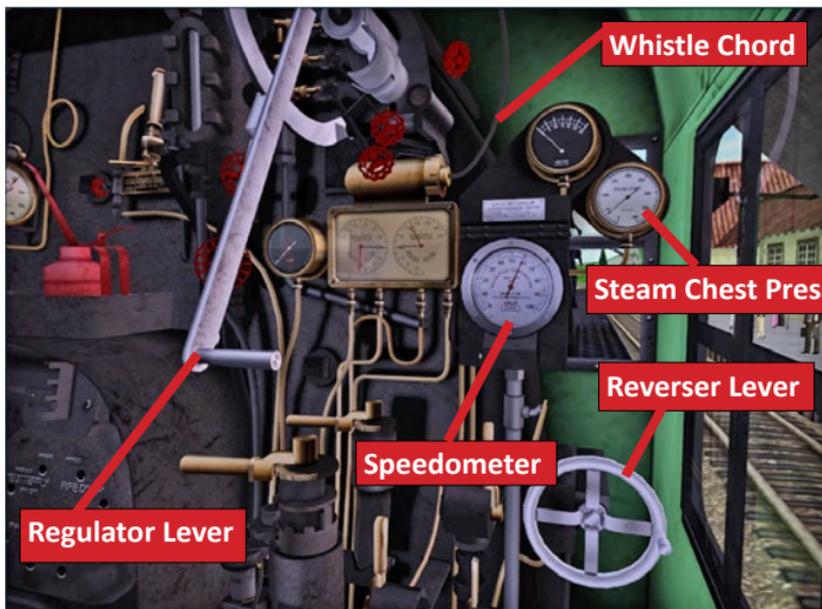
Regulator Lever

MOVING FORWARD

REGULATOR

HOTKEYS = W / X

The tooltip text in the Cab Interior View for the Regulator is "regulator lever".

Open the Throttle (Regulator) a small amount W . Open the throttle further W for more power. Reduce the throttle S to reduce power.

When a steam loco slips, it often spins up very fast, so you may need to fully close the throttle X and wait for the wheels to stop spinning before opening the throttle again.

As you pick up speed, to maintain steam pressure, you need to reduce the demand for steam. This is usually done by reducing the cutoff level. Consider this like the gears in a car - 75% is like first gear, and 15% like fifth gear. First is great for starting, but you can't go very fast. As you pick up speed you change up the gears. Slowly wind back the cutoff as you accelerate and you'll get the best out of the loco at about 15% or 20% cutoff at full speed. Open it back up to 30% or more when climbing a hill.

BRAKES

The brakes work much the same as a diesel or electric loco. There are independent (steam) brakes for the locomotive and tender, and air brakes for the whole train. There is no dynamic braking on a steam loco.

BOILER PRESSURE

Maintaining "nominal" boiler pressure is essential for good performance and this is maintained by heating the water in the boiler. This is achieved by having a nice hot firebed. As the boiler pressure drops, the performance of the locomotive will also drop dramatically.

NOTE *Nominal Boiler Pressure is different for each locomotive type.*
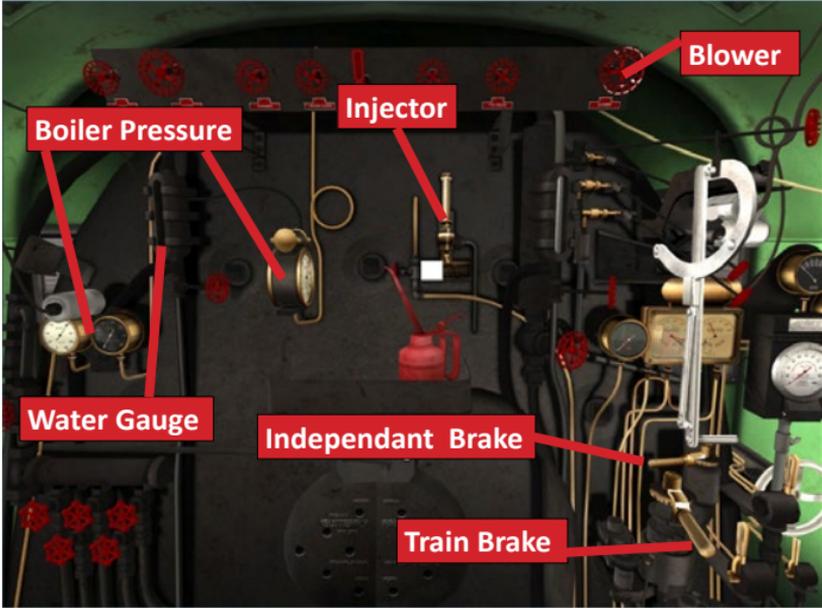
ADDING COAL

FIREMAN **Space**

A nice hot firebed requires coal and air (or sometimes oil rather than coal). Add coal to the firebed by pressing the spacebar. Fresh coal is cold, and adding lots of coal at one time will actually cool the fire down, making it burn slower and produce less heat. A great rule of thumb is "a little coal often"- try between 2-4 shovels every kilometer (or 3-6 shovels every mile).

NOTE *In some locomotives you will see an animated fireman actually shoveling coal so make sure you have opened the firebox door with your mouse in Cab Interior View or your fireman will not go to work.*

FIRE DRAFT

To help increase the firebed efficiency, draft the fire. There are three sources of draft:

Steam exhaust	Increased by working the locomotive hard.
Primary airflow	Increased by running faster.
Air blower	Which uses steam directly from the boiler to create artificial draft.

BLOWER

HOTKEY= [N] / [⇧ Shift] + [N]

The Blower accelerates the flow of air through the chimney pulling a strong draft through the firebox to keep the fires burning strongly when the loco isn't working hard. When closing the regulator, turn on the blower to maintain your fire and to avoid dangerous backdraught through the firebox.

WATER LEVELS

HOTKEY= [I] / [O]

As the fire heats up, the boiler pressure will start to rise. Always ensure there is sufficient water in the boiler by checking the water gauges; they should show half to two-thirds in the glass.

The Injectors are used to force water into the boiler and can be controlled independently of each other by using the mouse, or in tandem using the keyboard shortcuts ([I] / [O] and [Alt] + [I] / [Alt] + [O]). Add water gradually as it is cold when coming from the tender and will cool the boiler quickly if added in large quantities.

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Steam Injector

WHEN LOW WATER ALARM WHISTLE B...
START INJECTOR AND PUMP IMMEDIA7...
IF UNABLE TO PUT WAT...
IN BOILER EXTINGUISH THE FIRE.
NATHAN MFG. CO.   NEW YORK

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The Steam Injector is a precision piece of equipment which uses a venturi system to use high pressure steam to push water from the tender into the boiler under pressure through a check valve which only allows water into the boiler if the pressure behind the water exceeds the pressure in the boiler.

Use the Steam Injector to bring the water level up to the right level and then turn it off.

TIP *Once the train is moving, the Steam Injector can be set so that the amount of water entering the boiler closely matches that being used up as steam. As an engineer, you must continually monitor water levels and anticipate adjustments as steam will be used up at different rates depending on how hard the engine is working.*

Safety Valves

SAFETY VALVES

When the nominal boiler pressure is exceeded, Safety Valves lift to vent excess pressure to the atmosphere. A good crew will avoid this waste of steam and fuel by striking a good balance between the temperature of the fire, the pressure in the boiler, and the conditions of the track ahead. When approaching a heavy ascent for example, a hot fire will be required to maintain adequate steam pressure. Conversely when approaching an easy section with a very hot fire, pressure can be eased to prevent lifting safety valves by adding more water to the boiler.

TENDER

Observe the water level in the locomotive's tender periodically, especially after working the locomotive hard, as it may require topping up. Steam Routes often have water supplies provided at regular intervals for this purpose.

WHEELSLIP

Steam engines are notorious for the ease with which you can get wheel slippage. It is quite a spectacular sight to see. To avoid slippage, start gently and use the sanders if required. Sanders deposit sand just in front of the driving wheels to improve traction. When decelerating, it is also important to consider the action of slack running in and out on the train. Always avoid reducing the Regulator quickly. Sudden changes in power propagate a wave motion throughout the train possibly causing spilled soup in the dining car or a very uncomfortable ride for your passengers!

ADDITIONAL DRIVING GUIDELINES

Controlling a steam engine is quite different from a diesel or electric engine. Forget about dynamic brakes and "notch" throttle settings; your steam loco is powered by a firebox full of fuel that turns water into steam. You still have the train brake, but the regulator/reverser are the combined throttle/power settings and balancing these two controls while maintaining your "head of steam" is an art that takes some practice and perseverance.

REVERSER & REGULATOR

The Steam Reverser Handle (or Steam Cutoff) has multiple positions and adjusts the steam loco's valve gear in such a way that the pistons drive the driving wheels in the appropriate direction. In the center or neutral position, no tractive effort will be generated by opening the throttle.To start a steam engine, place the Reverser Handle in the full forward position. Once moving forward, bring the Reverser Handle back towards the short cutoff position, thus adjusting the valve gear for most efficient operation to preserve your coal and water supplies. Move the Reverser Handle forward into the high cutoff range when accelerating or climbing grades. The Reverser is used with the Regulator to control a combination of speed and tractive effort.

Correct use of the Regulator depends on various factors such as the type of locomotive, the weight and length of the train, the severity of grades and weather conditions. Open the Regulator to deliver steam to the valves which govern the distribution of the steam to the main cylinders which in turn drive the driving wheels. When starting off, advance the Regulator very gently. The finest of steam era engineers started their trains so smoothly that passengers hardly noticed that they were moving. It is also important to pick up the slack in all of the couplers in a long train. Once the slack has run out, the Regulator may be advanced as desired to suit operating conditions and the needs of the schedule.

MAKING STEAM- FIRE & WATER

A Steam Engine needs a full head of steam to operate effectively. Build a fire in the firebox by shoveling coal through the firebox door in the middle of the backhead (the front of the cab). Fill the

boiler to approximately 2/3 of the way up the glass. A hot fire and an empty boiler is a catastrophic situation so it is vital to monitor the water level in the boiler and keep it at about the 2/3 level. While standing in the station or otherwise stopped, you may use the steam available in the boiler to add more water to the boiler. To do this, you adjust the valve on the backhead that controls the provision of steam into the Steam Injector.

BOILER- UNDER PRESSURE

The Boiler field measures the current steam pressure in the boiler. This pressure is dependent on a number of factors and maintaining a head of steam is one of the challenges in running a steam locomotive.

WATER- NEARLY STEAM

The injectors allow water to move from the tender (or engine mounted water tank) to the boiler. Moving the water into the boiler can also be used to reduce the rate of pressure increase in the boiler as the thermal energy of the fire is now being used to heat the incoming cool water.

REGULATOR- GIVE ME STEAM!

The Regulator field displays the current position of your regulator the range of values is expressed as a percentage (0-100%). The Regulator in conjunction with the Reverser setting determines how much and at what portion of the piston stroke that steam is sent to the cylinder.Together the Reverser (or Cutoff setting) and the Regulator act as the Train's throttle.

CUTOFF- HOW MUCH STEAM?

The Cutoff field displays the percent cutoff as dictated by the position of the Reverser lever is expressed as a percentage (minus 75% to plus 75%). Negative values indicate the valve gear has been set to move the locomotive in reverse. The higher the Cutoff value, the greater the duration of steam application to each piston stroke. Long cutoff (40 to 75%), maximizes the tractive effort applied to the locomotive wheels. This is mainly used to get the locomotive moving from a standstill or when tackling an ascent. Short cutoff (less than 40%), is used to maximize the speed attainable by the locomotive during easy sections of the Route and where speed restrictions permit.

4. WORLD BUILDING WITH SURVEYOR

"

The true depth of Trainz lies within the Surveyor Tools combined with your own creativity. Every Route and Session presented to you has been made with the very same tools you are now about to discover.

INTRODUCTION TO SURVEYOR

Surveyor is a toolset that is both fun and simple to use yet powerful enough to create your ultimate dream railroad. Create terrain, paint with textures and then populate your world with trees, shrubs, buildings, roads, power lines, animals, people and more. Create lakes and rivers, change the weather conditions and even change the color of the sunset.

In addition there is a range of railroad specific tools to place track, junctions, signals, turntables and other trackside infrastructure that together form a working railroad.

Edit existing Routes or start from scratch to construct your own. You can also download a huge number of Routes created by others from the Trainz Download Station and modify them to suit your tastes.

Surveyor provides all the tools to create both the Route and Sessions that operate upon that route. It is important to understand these terms before getting started:

Route	A Route is the "world" that comprises primarily of terrain, textures, scenery, track and trackside objects.
Session	A Session is the "interactive components" that appear within a Route and include locos, rolling stock, player instructions, messages, objectives, scoring etc.
Route Layer	All the items saved when the Route Layer is editable.
Session Layer	All the items saved when the Session Layer is editable.
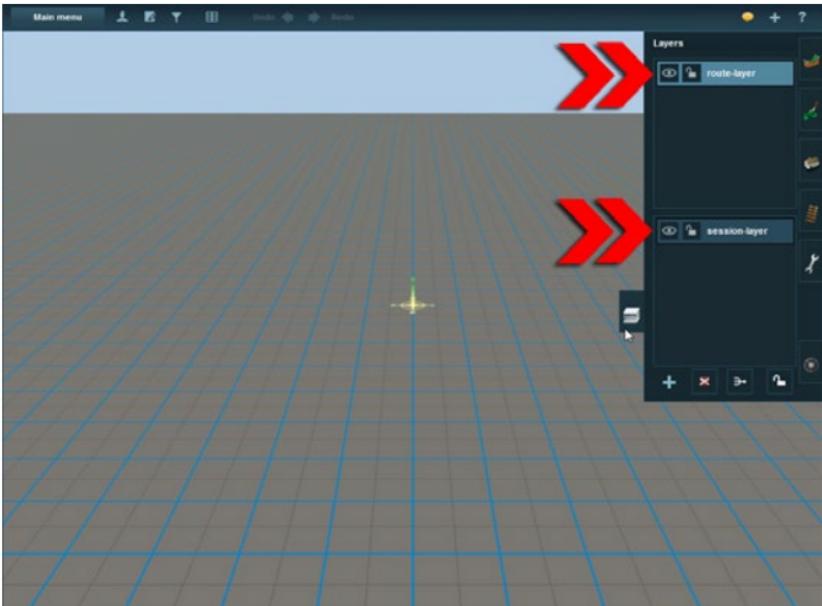
LAYERS OVERVIEW

Layers allow you to split design elements into easily manageable sections; in T:ANE, Layers work in the same way as many other graphical editing applications.

You can lock Layers so that anything associated with them cannot be edited and you can hide Layers to make your Route easier to work with. For example, you can add all trees in a "Tree Layer" then use Hide Layer to hide all the trees while you continue working on other aspects of the Route or Session.

Layers exist in either the Route or a Session. Layers applied to a Route are available to all Sessions for that Route whereas layers applied to a Session are only available for that Session.

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NAVIGATING AROUND THE 3D WORLD
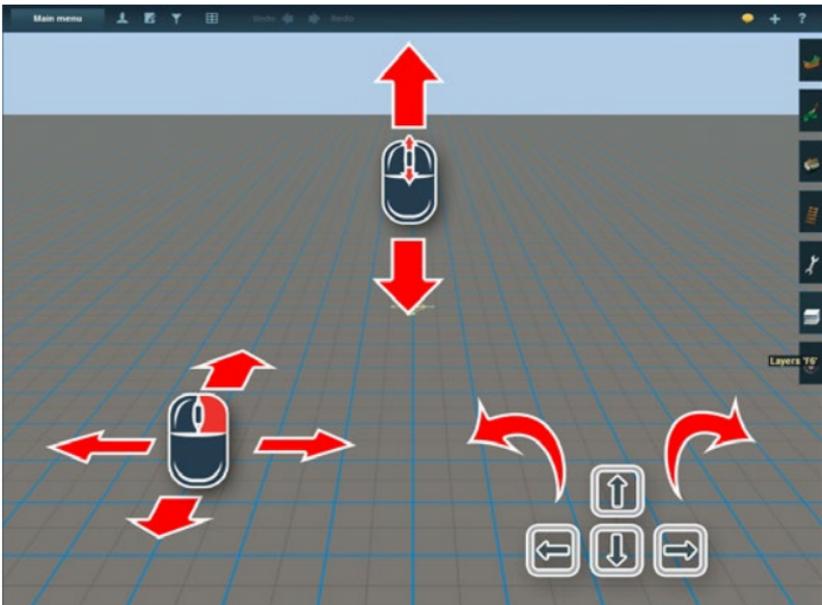
Click on Create Route. The terrain grid you see is the "table" or "baseboard" upon which you build your Route. In the middle of the baseboard is the Surveyor Compass which indicates the center of the screen. Click away from the compass to re-center the screen to that position.

Click + Hold, slowly moving your mouse cursor towards the edge of the screen. The compass will follow the cursor as you move around the baseboard. Learn to control the speed of the movement by moving the compass close to or away from the centre of the screen.

Use the arrow keys on your keyboard to rotate the camera around the compass. The left and right arrows rotate the camera around the compass while the up and down arrows change the elevation of the camera.

Use Page Up and Page Down to zoom in and out or mouse-wheel if you have one.

Zoom out to "satellite" altitudes to transition into the 2D map view. In this mode you can set which labels are displayed.

NOTE *You can change the default movement system in Surveyor Main Menu > Options > Surveyor Settings.*
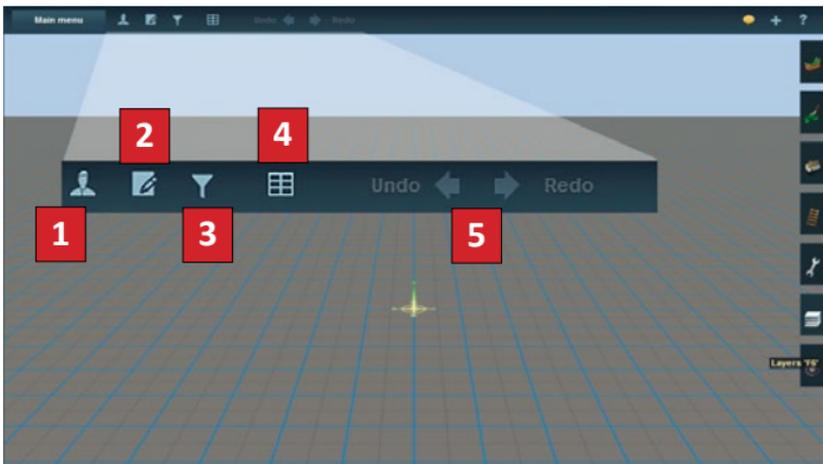
SURVEYOR MENU BAR

The Menu Bar at the top of the Surveyor screen provides access to various tools plus the Main Menu.

QUICKDRIVE

1 HOTKEYS = `Ctrl` + `F2`

The QuickDrive button lets you jump quickly into a Driver Session without having to quit Surveyor.

(LOOK) See QuickDrive Introduction page 58.

EDIT SESSION RULES

2 The Edit Session menu is where all the Rules that define a Session are added and configured.

(LOOK) See Customising your Session page 181 for further details.

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CONTENT SEARCH FILTER

3 HOTKEYS = `Ctrl` + `⇧ Shift` + `F`

The Content Search Filter is used to find specific items for your Route or for reducing the number of items displayed in the Tool Tab lists. When a filter is active, a "filter" icon appears in the edit box for each of the tools affected.

(LOOK) See Using Search Filters page 118

WIREFRAME VIEW

4 HOTKEYS = `F9`

The Wireframe View button `F9` replaces the textured terrain with a see-through wireframe. This mode is useful for seeing what lies beneath the ground such as under hills when placing and moving tunnels. Use `F9` again to return to the regular view.

UNDO AND REDO

5 HOTKEYS = **Ctrl** + **Z** / **Ctrl** + **Y**

Undo and Redo are used to clear up mistakes and recover deleted objects. Doing a number of things quickly, such as painting a large area, can be undone in one click. Click Redo to reapply changes made by using Undo.

USING SEARCH FILTERS

118
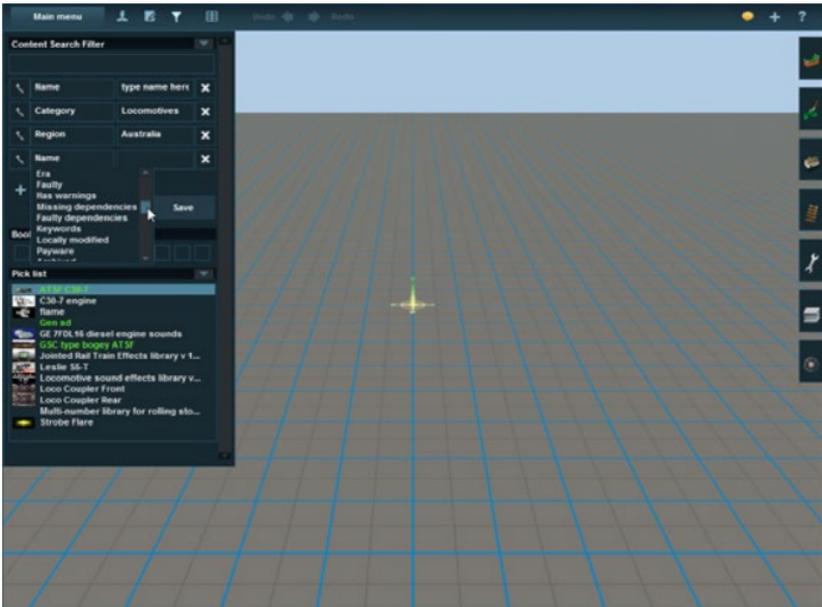
Click on the **+** to display the Name filter. Click on Name to display a scrollable list of all available filters.

Click to select a filter from the list then Click to configure the chosen filter. Either select from the drop down list if available or enter your chosen filter value.

To close the Search Filter click on the Content Search Filter icon **Ctrl** + **↑ Shift** + **F** once more.

BOOKMARKS
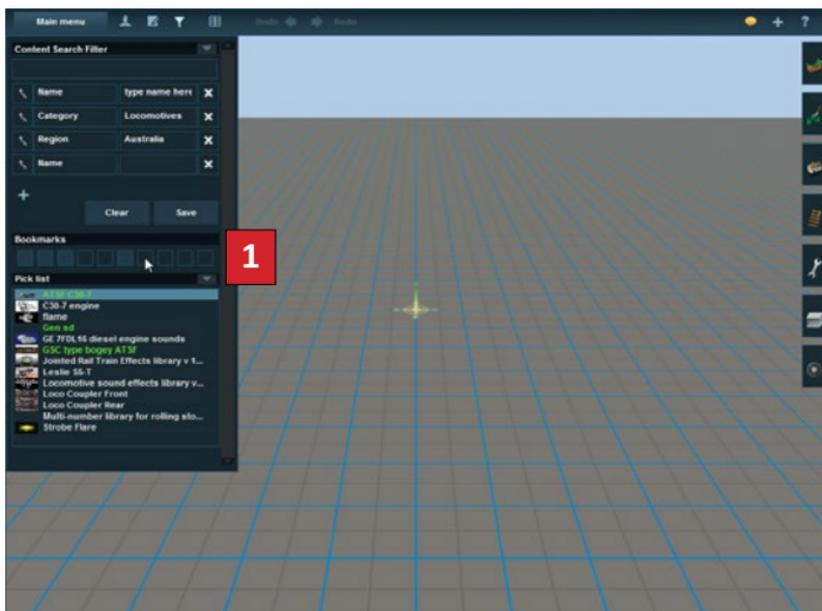
1 Bookmarks are points manually placed onto your Route so that you can return to that location at any time. Click 🖱 on one of the Bookmark buttons then click Set Bookmark to save your current compass location. The button remains highlighted to indicate that a Bookmark is stored.

Click on any Bookmark to return to that location.

PICK LIST

Located at the bottom of the Content Search Filter dialogue, the Pick List is used to store a selected list of items for quick access.

To add an item to your pick list, find the item in the relevant menu, 🖱 + drag it to the Pick List. To remove an item 🖱 + drag it out of the Pick List window.
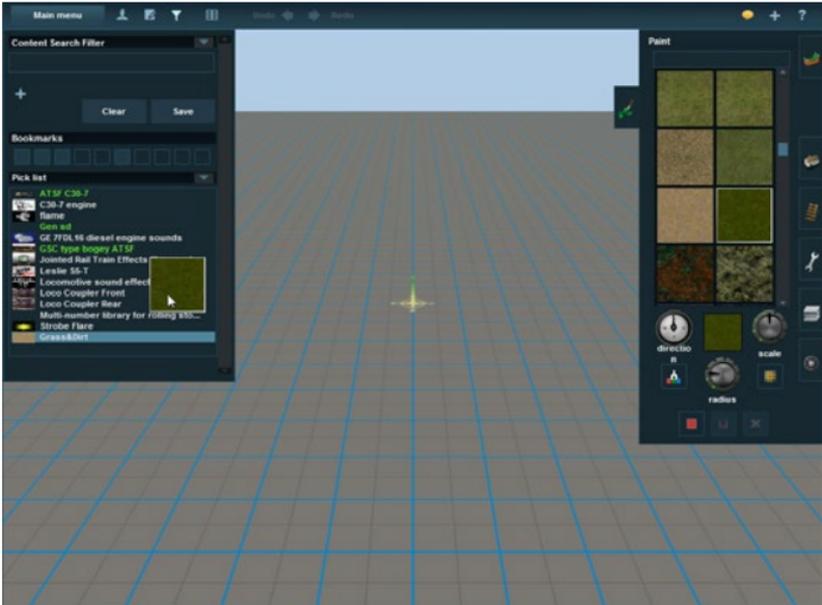
You can add commonly used items such as textures, objects, spline, track, signals and trains into your picklist.

Select any item in the picklist and drag it off the list to remove the item.

MAIN MENU

Click on Main Menu to access a range of options to customise your Route and Session as well as adjust various settings.
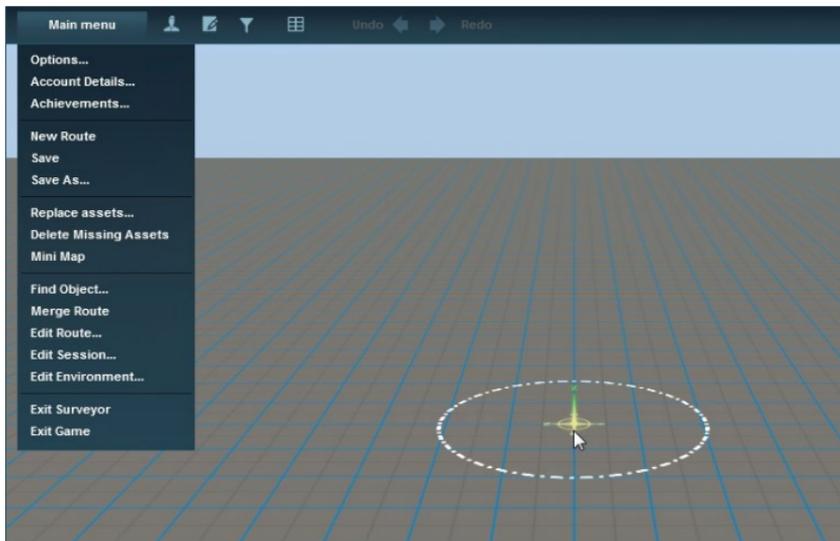
121

NEW ROUTE

Click on New Route to begin a new project. Enter the Route and Session name and description, then choose from the available set-up options:

Region	Changing the region changes your default world origin, creates appropriate seasons for northern and southern hemisphere, specific road traffic and road rules and also changes the defaults for placing Trackside objects.
Working Scale	To develop a scale model layout, select from the list of available scales. The rulers (found in Tools) will measure real world distance in actual inches or meters in the chosen scale.
Working Units	Choose metric or imperial measures to adjust the speed display and other operating conditions such as brake pressure units.

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SAVE AND SAVE AS

To save the current Route/Session with the same name use Save. To save a new version use Save As. This provides "version control" to revisit an earlier version.

Choosing Save provides several choices of how to save. The currently selected choices are highlighted green. Any other options that are valid are gray with white text and invalid options are grayed out completely.

Choose the appropriate options and a confirmation dialog will appear to confirm your options are correct.

REPLACE ASSETS

Use this tool to quickly replace one set of assets with another asset. For example, you could replace all your "old" track with the new T:ANE "procedural" track.
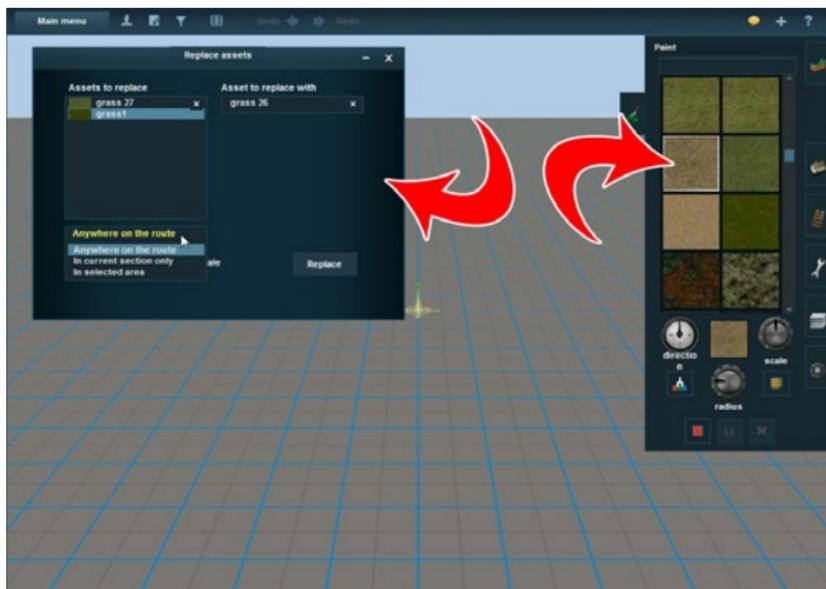
Select the item (or items) you want to replace by either searching in the menu tabs on the right hand side, or by using the Get Tool and clicking on an object in the 3D world.

Click-LMB and drag the item from the Tool Tab into the "Assets to replace" section. Next, select the new asset you want to use, and drag it into the "Assets to replace with" section of the tool.

Choose from the three options which will determine where objects are replaced:

Anywhere the item exists on the route

In the current section only (i.e. current baseboard)

In selected area

When ready, click on "Replace" to update all the assets.

DELETE MISSING ASSETS

Delete Missing Assets will remove any links to missing objects from the route file and thereby remove "errors" in Content Manager. Assets can become missing if you have uninstalled a required item or if you have downloaded a new map without all the custom content.

Click on the Delete Missing Assets option and simply click to confirm or cancel the action.

MINI-MAP

Click on Mini-Map to bring up an overview of your current map. You can also toggle the Mini-Map on and off using `Ctrl` + `M` .

Whilst in mini-map mode, you can navigate around the terrain quickly by zooming out and click- to move the baseboards around the screen.

Click on the "Map Display Options" text in the top left corner of the Mini-Map window and select/deselect the labels and items you want to show/hide as desired.

Click on the ☒ in the upper left corner of the Mini-Map to close this window.

FIND OBJECT

Use the Find Object Ctrl + F Tool to locate Named items on your Route. Choose the Type of object (e.g. Industry or Vehicles) to reduce the items listed, then enter the name of the object. The map is re-centered when an item is selected from the list.

MERGE ROUTE

Merge Route joins one saved Route to another. First load the route you want to use as your "base" route, then select Merge Route to view a list of all your saved maps. Choose the map you would like to merge with and click the Checkmark.

The baseboards from both maps are shown and red shading indicates where the current map and the new map overlap. Use the four small arrows to move the map left, right, up or down. Use the four white arrows to navigate around the mini map. Click on the Checkmark once you have uncovered all the red overlapping sections and aligned the maps correctly.
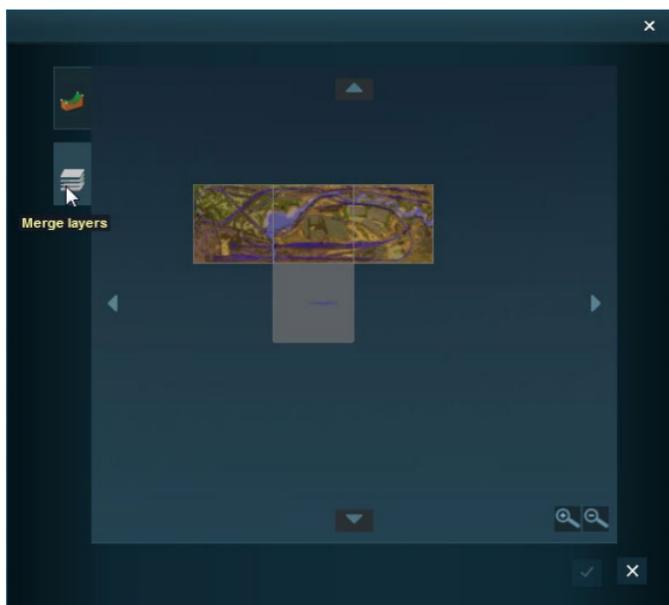
Note that when merging maps, it is likely that your route and session layers may have the same names. Double click on a layer then edit the layer name. You can then also merge your two route layers into one layer to make ongoing editing easier.

(TIP) *You cannot rotate a map and large maps will take some time to merge.*

(NOTE) *When two maps are merged, the different terrain levels need to be smoothed where the maps join, and any track must also be joined manually.*

EDIT ROUTE
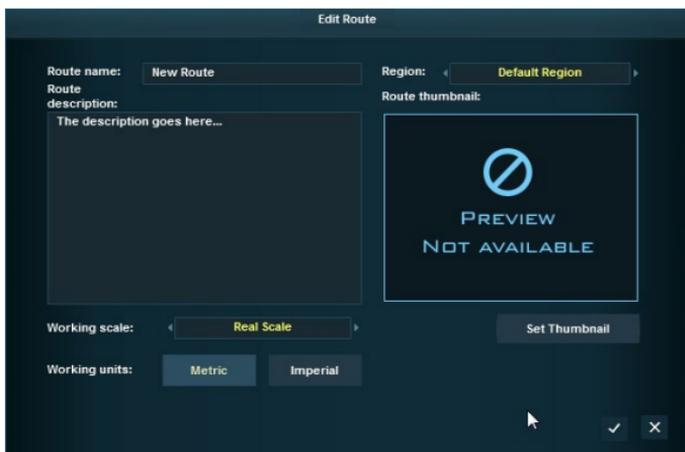
Use Edit Route to modify the properties associated with a Route such as Route name, Description, Region, Working scale and the Working Units*.*

Use the Set Thumbnail tool to take a snapshot of your route. Move your compass and position your camera for a scenic shot, then click the "Set Thumbnail" button. This takes a screenshot of the chosen location and adds it automatically to the route file. This is the image others will see if you choose to share your route via the Download Station.

EDIT SESSION

Click on the Edit Session item to open up the Edit Session window. This window is where Sessions are constructed and configured using rules. A default set of basic rules is provided to get you started.

(LOOK) Refer to Customising your Session page 181 for more details on Session Editing.

EDIT ENVIRONMENT

The Environment Options allow you to adjust various settings that affect the look and feel of the entire Route that you are creating.

These elements include weather, lighting, sky and water appearance, road traffic and even the latitude and longitude of your route.

(LOOK) Discover full details for using these individual elements in Edit Environment Menu page 174.

SURVEYOR TOOL TABS

Down the right side of the Surveyor main screen are seven menu tabs containing all of the tools you will need to successfully make your own Route and Session in Surveyor.

TOPOLOGY MENU

HOTKEY = **F1**
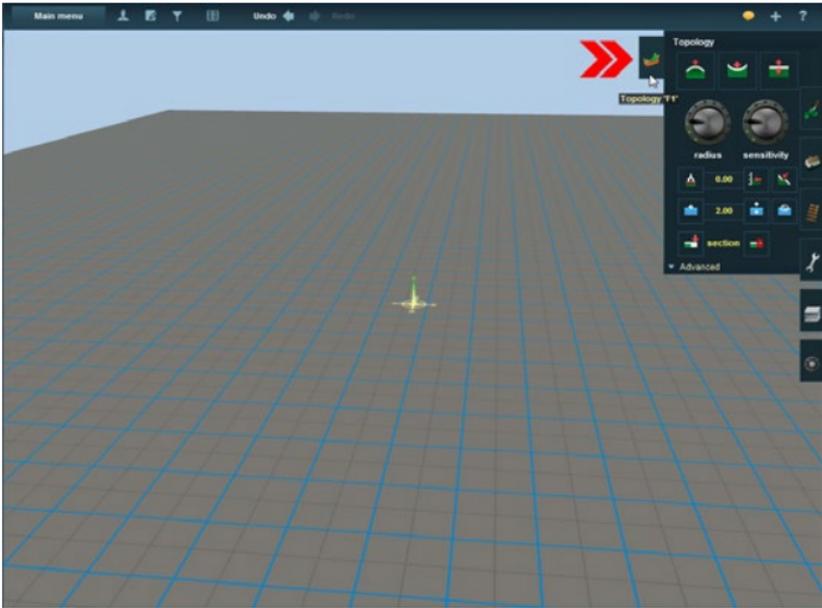
The Topology Menu provides the tools for creating various types of terrain. In this section you will learn how to make hills, valleys, mountains, lakes and rivers.

Click on the Topology Tab **F1** to open the Topology Menu. Hold your mouse cursor over each button and dial to see a short description "tooltip" as well as the appropriate Hotkey to press.

HEIGHT UP U

Click on Height Up and your mouse cursor changes to a circle called the "area of influence". Click- + Hold in the 3D world to stretch the terrain upwards. Hold longer and the terrain continues to rise.

Click on the Radius Tool + to enlarge the circle of influence. Click- + hold again. The hill created is wider and flatter.
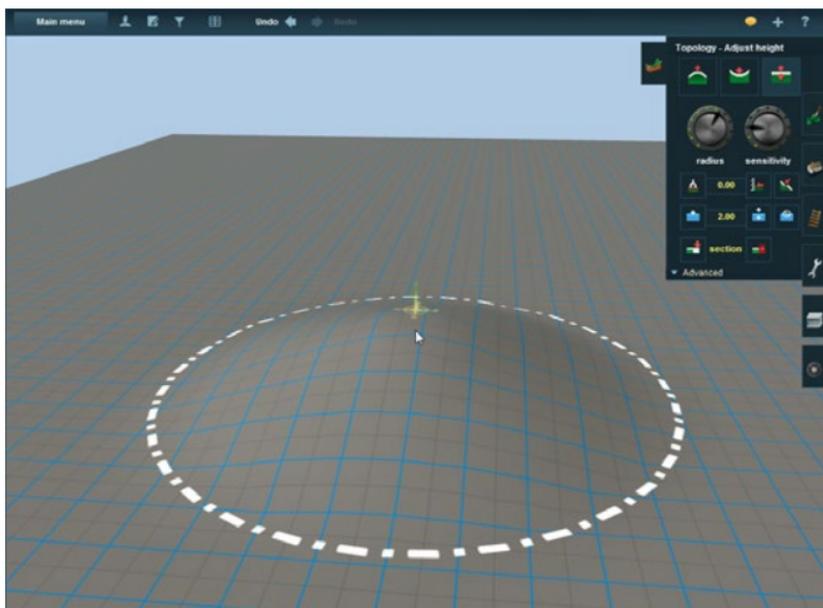
Zoom Out Page Down and use the arrow keys to rotate your camera to get the best view of what is happening. Click- + hold, move the mouse around the terrain and the hill "follows" your cursor.

Move the Sensitivity Dial [and] and click once more to deform the terrain at a faster or slower rate.

HEIGHT DOWN D

Height Down works like the Height Up tool but reduces the terrain height.

ADJUST HEIGHT [A]

Adjust Height allows finer control to raise and lower terrain. Click- + hold then push your mouse away from you (cursor moves up the screen) to raise the terrain. Click- + hold then pull the mouse towards you to lower the terrain.

GET HEIGHT [G]

Select Get Height, then click on the side of a hill. The number in the Height Value field changes to display the height of the spot you clicked on. This is useful when you want to then go to another location and set the terrain to the same height.

USE HEIGHT [H]

Click on Use Height then click to apply the selected Height Value to the terrain. The Use Height tool creates a plateau at your selected height and the radius of your cursor circle determines the amount of land that is leveled at one time. You can also manually enter a height into this field.

PLATEAU [P]

Plateau works in a similar fashion, and simply creates a plateau at the current height of the compass. Click on the side of a hill to create a plateau at that level by raising or lowering the terrain.

ADD WATER [W]

To create a "riverbed", make your circle radius as small as possible. Next, enter "-10" in the Height Value field. Then click on Use Height and make your riverbed by "painting" the new height along the terrain. Clickon Add Water [W] and paint the water texture along the riverbed by clicking and moving your mouse. The radius of the cursor circle determines the texture panel size. Paint enough squares so that they will cover the area of your riverbed.
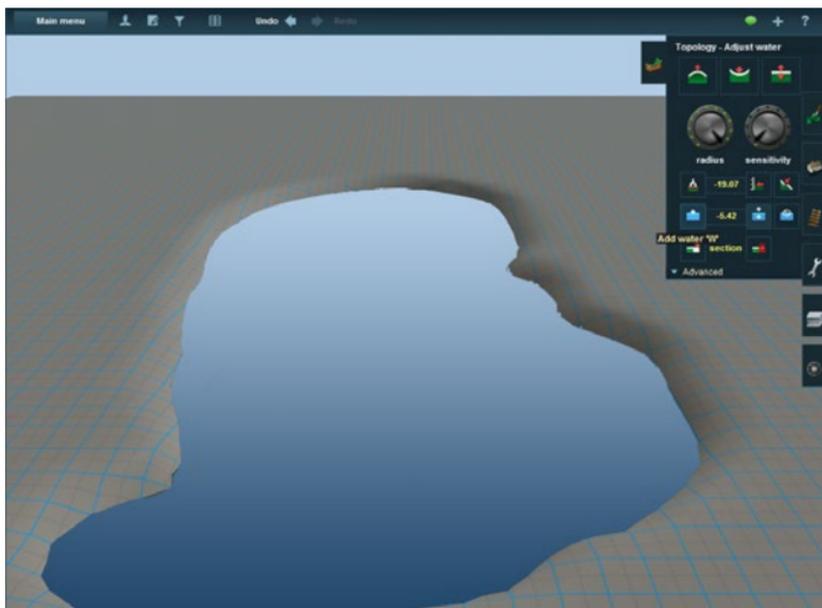
ADJUST WATER HEIGHT $\boxed{\text{E}}$

At first the water "floats" above the terrain. Adjust Water Height works like the Adjust Height tool. Select the Adjust Water Height tool and click- 🖱 + hold on the water texture then drag your mouse forward and back, adjusting the water texture height. Note how it properly fills the riverbed as you move the water downward.

REMOVE WATER $\boxed{\text{Q}}$

Click on Remove Water and you then delete the water texture one panel at a time by Clicking on each water panel.

THE BASEBOARD

Baseboards are in effect the "table" upon which you build your Route. The baseboard sections are 720 meters by 720 meters square and the default grid square is 10 meters by 10 meters in size.

ADD GROUND [X] − 10M GRID

Navigate to the edge of a baseboard by Clicking- to move the compass. Then select the Add Ground [X] tool. Click in the void just off the edge to add another baseboard in that direction. Zoom your camera out (or [Page Up]) and you will see there are now two baseboards in your new world.

ADD GROUND [X] − 5M GRID

Navigate to the edge of a baseboard and then click- on the Add Ground [X] tool. A dialogue appears with the option to choose from either 5m or 10m grid. Select 5 meter and click the tick to accept. Click in the void just off the edge of the baseboard to add another baseboard, this time with a 5 meter terrain grid. With the 5m option selected, click on an existing 10 meter baseboard to upgrade it to 5 meter grid. Note that this makes your maps 4 times bigger on disk and will degrade performance over the 10m grid option.

DELETE GROUND

Click on the Delete Section button. Then click on any baseboard section to delete it. This cannot be done if you are zoomed out too far.

ADVANCED TOPOLOGY FUNCTIONS

HOTKEY = [⇧ Shift] + [F1]

The Advanced features menu can be opened and closed by using Shift-F1 or clicking on the Advanced Tab.
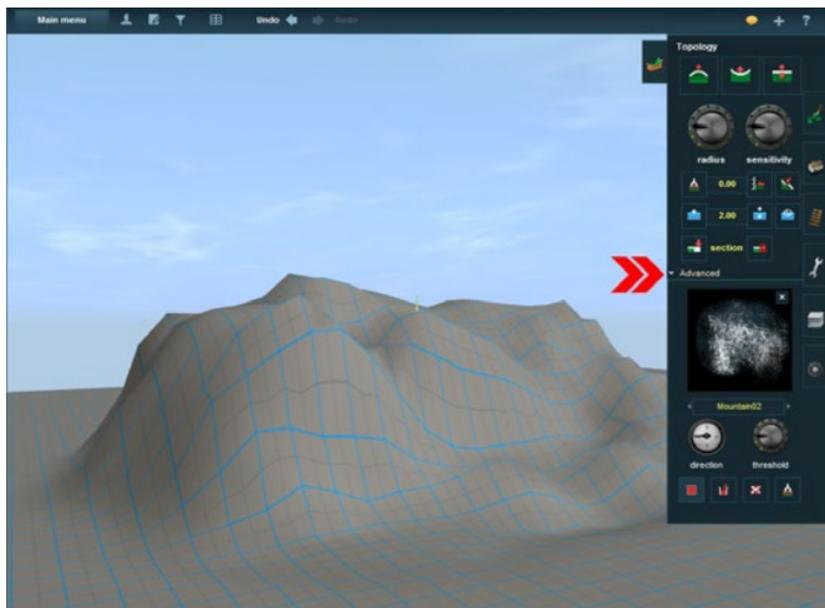
DISPLACEMENT MAPS

The final group of Topology tools relates to using a displacement map. A displacement map is a grayscale image used to create an instant height map. By changing displacement maps and altering the sensitivity, you can create a variety of terrain shapes using this tool.

SELECT AREA [B]

Click on Select Area. 🖱 + drag the mouse to make a large square. The size of the square (or rectangle) determines the area that will be affected by the next operation.

FILL AREA F

Scroll through the Displacement Maps by clicking on the left and right arrows and select one. Click on Fill Area F and the terrain is instantly transformed into the shape determined by the grayscale images of the displacement map chosen.

Move the Direction dial and increase the Threshold dial. Click on Fill Area once more. This time the valley is bigger and faces a different direction.

CANCEL SELECTION D

Click on Cancel Selection to cancel the selection.

GET DISPLACEMENT

Click on Select Area B . Click- + drag across the baseboard to make a large square that covers an existing area of modified terrain. Now click the "Get Displacement" button and you'll notice that a displacement map has been derived from the shape of the terrain selected. This can now be used to apply the same terrain effect in another area.

DISPLACEMENT BRUSHES

Displacement maps can alternatively be used like paint brushes, adding irregular detail to the Height Up and Down, Use Height and Plateau tools.

Select a displacement map and notice that the Height Up brush is now a "square of influence". Click- + hold over the baseboard to apply the selected displacement.

MAKING YOUR OWN DISPLACEMENT MAPS

You can also make your own displacement maps using a simple paint program (e.g. MS Paint) and then drop them into the \Resources\Base\Displacements folder in your T:ANE directory to make them accessible.

134
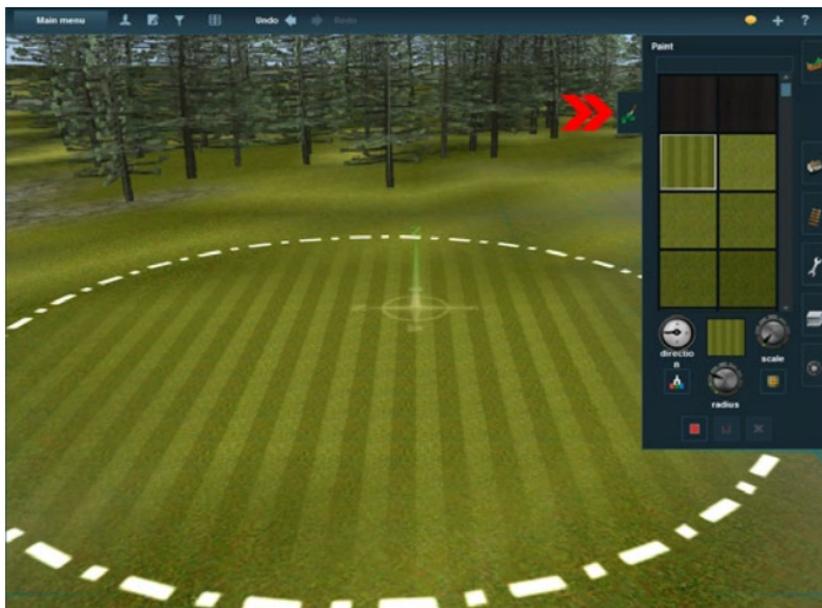
PAINT MENU

HOTKEY = **F2**

BASIC PAINT FUNCTIONS

Click on the Paint Tab **F2** to open the Paint Menu. Scroll through the list and click on one of the textures. The texture appears in the current texture window. Click-LMB on the terrain and use your mouse as a paintbrush to paint on the texture.

The Radius Dial (**+** or **−**) changes the area of influence of your cursor circle. Use the larger radius for quicker painting and the smallest radius for more accurate and detailed work.

Find a striped texture and paint a section of terrain. Rotate the Direction Dial 90 degrees and apply the texture again. Notice how the texture direction has changed.

Use the Scale dial to adjust the texture scale.

TIP You can use the Pick List at the bottom of the Content Search Filter as a place to store multiple textures or objects that you use regularly. Click- + Hold on the texture, drag and drop onto the Pick List.

GET TEXTURE **G**

Click on the Get Texture tool then click on a texture already painted onto your terrain. The current texture window changes to show the newly selected texture.

FILL GRID **L**

The Fill Grid will bring up the "Replace Asset" window. Choose a texture then tick to fill all unpainted areas of an entire baseboard with one texture.

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SELECT AREA **B**

Click on the Select Area then click- + drag a rectangle of any size. Use Fill (F) to then fill the area with a single texture.

FILL AREA **F**

Then click on a texture and use the Fill Area tool to texture the whole "Selected" rectangle. If no area is selected, click on Fill Area **F** will fill all untextured areas.

CANCEL SELECTION **D**

Click on Cancel Selection to cancel the selected area.

OBJECTS MENU

HOTKEY = **F3**

OBJECT MANAGEMENT FUNCTIONS

There are a huge number of objects in T:ANE available to populate your world. There are two different types of objects; Objects **O** and Splines **S** . Spline objects are covered in the next section.

Open the Objects Menu by clicking on the Objects Tab **F3** . The default mode is "Object Mode" and the tool selected is "Add Objects". Scroll through the list of objects . The selected object shows as a rotating 3D object in the viewer window.

NOTE *You can control which items show in your list by using the Content Search Filter on the Menu bar.*

ADD OBJECT **A**

Select an object then click on the terrain where you want the object placed. Repeat the process to add more objects.

MOVE OBJECT M

Click on the Move Object and click- + drag on any object to move the object around the terrain.

ROTATE OBJECT R

Click on the Rotate Object and click- + hold and move the mouse left and right to rotate the objects. The display shows the degrees of rotation.

Use the move and rotate tools to create rows of trees or to align houses along a road.

TIP ▶ *Choose the Randomly Rotate option in Main Menu > Surveyor Options to vary the direction of each object placed.*

GET OBJECT G

138 Click on Get Object and then click on an object already placed on the terrain. The object now appears in the selection window.

Change the mode to Add Object A and click again on the terrain to place another copy of the newly selected object.

DELETE OBJECT D

Select Delete Object then click to delete an object. Continue clicking to delete a number of objects. If you click on the wrong object, click on Undo Ctrl + Z .

ADJUST HEIGHT [H]

Objects are placed at ground level by default. The object follows with the terrain as it is raised or lowered.
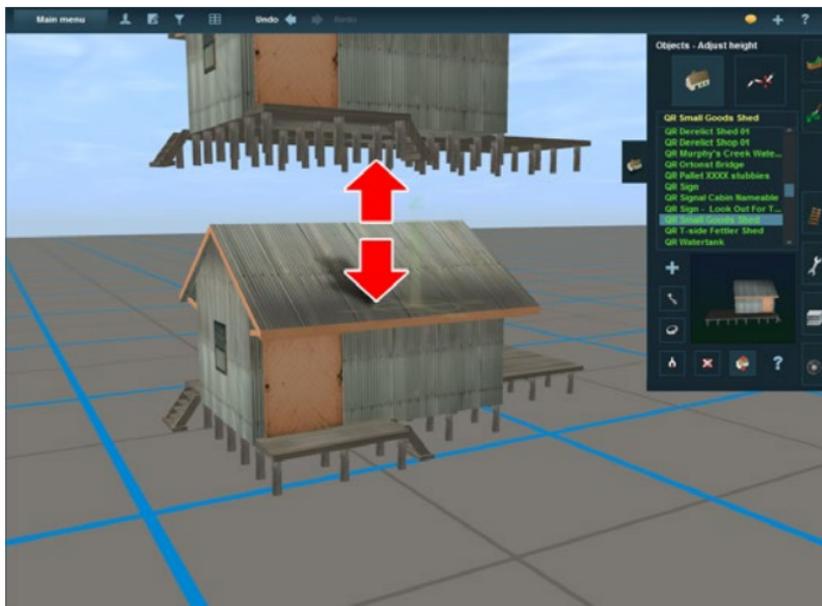
139

Click on Height Adjust then click- 🖱 + drag to adjust the height of an object. Adjust the accuracy using Ctrl or Shift as follows:

🖱	Standard adjustment 1 unit.
[Ctrl] + 🖱	adjust in increments of 0.1 units.
[↑ Shift] + 🖱	adjust in increments of 0.05 units.

EDIT PROPERTIES [N]

Click on Edit Properties then click on any object in your Route. The Properties Menu opens allowing you to name the object.
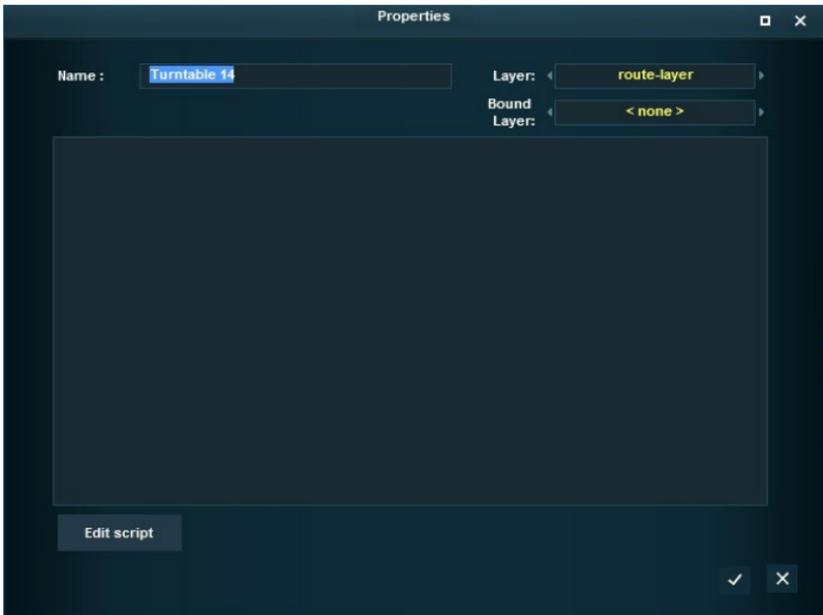
140

If the object has any scripted elements, you can also configure the object. Here you can also move the object between Layers.

SPECIAL OBJECT TYPES

As well as the regular objects there are also a range of special objects with unique features. These objects often have track included that can be linked to the track on your Route.

INDUSTRIES

An industry is a scenery item with track and which also produces and/or consumes products. Train vehicles can load and unload products at an industry. See Commodities for more information about what can and can't be carried.

The products produced and consumed by an industry can be viewed and edited using the Edit Properties button.

Tip: Industries can be found in the scenery object list by selecting the "Industry" category in Content Search Filter.

FIXED TRACK

Fixed track scenery items are fixed, non-flexible segments of track and are the Trainz equivalent of sectional track made by model railroad manufacturers.

Fixed track is placed like any ordinary scenery object and can be placed on flat ground then connected to track splines.

It is also possible for fixed track pieces to snap together when one piece is moved in close proximity to an end point of another. The end points of a fixed track are identified by the red arrow seen hovering above the track.

When rotating or moving a piece of fixed track, other pieces of fixed track attached to it will also be rotated resulting in the track pattern being maintained during rotation.

Fixed track can also be combined with fixed, animated junctions, although the new procedural junctions provide a lot more flexibility.

PROCEDURAL ANIMATED JUNCTIONS

New to T:ANE is the ability to lay track and create animated junctions "procedurally" (i.e. the software works out the solution rather than the user). This avoids the need to use fixed track components or complicated work-arounds.

Refer to the Laying Track page 147 section for more information.

TURNTABLES

Turntables are "Scenery objects" with multiple incoming sections of track and a special traverser track segment (usually rotating) that provides access to all track pieces. Simply place a turntable object on the baseboard and connect each track segment to your standard track.

Filter on "turntable" in Content Search Filter then open the Objects Tab to see a list of all turntables available.

CROSSINGS

A crossing is a scenery object that allows a road to cross over a rail track. Crossings support animated gates that are automatically activated as a train enters and leaves a proximity region surrounding the crossing.

The operation of crossings is automated and even the Carz will stop on the road approach when the gates are lowered.

For certain scripted assets, it is also possible to adjust the parameters of the signals, bells and boom gates.

BACKDROPS

Backdrops are rendered regardless of the view distance settings. This means they will always be visible and won't disappear like other distant scenery items. This makes them suitable for scenic backdrops, although with extended draw distance in T:ANE, this object type may not be suitable.

SPLINE MANAGEMENT TOOLS

Splines are special objects that are created by stretching between two points. This suits long thin objects such as roads, power lines, fences and catenary.

LOOK Tracks are another type of Spline and are dealt with in the Track Menu page 147.

SPLINE MODE **S**

To enter Object Spline mode, click on the Spline Mode button at the top right of the Objects menu.

ADD SPLINE **A**

Select a spline object, then click on the terrain to anchor the first spline point. Click again some distance away to place the second spline point. The white circles at each end of the spline determine the points of a spline that may be selected or moved. To extend the spline further, click again on the last spline point, then click once

more nearby to extend the spline.

TIP *Hold down the* **Ctrl** *key then each click will place a new spline point to extend your spline. Release the* **Ctrl** *Key and click to place your final spline point.*

MOVE SPLINE **M**

Click on the circle, then drag the spline point to a new position.

To avoid "snapping" to a nearby spline, hold the **⬆ Shift** key down when placing the spline points. This forces the spline point to be placed wherever you click.

TIP *Use* **⬆ Shift** + 🖱 *to place one spline on top of another without it being attached to the existing spline. This is useful to create a right angle turnout such as a fence.*

GET SPLINE **G**

Click on the Get Spline tool and then click on a spline object already placed on the terrain. The selected spline object now appears in the selection window. Change the mode to Add Spline **A** and click again on the terrain where you wish to place the newly selected spline object.

DELETE SPLINE **D**

Click on Delete Spline **O** then click on a section of spline between two adjacent white circles. If you delete a section that is not an end section of a spline, the spline will be split into two splines.

SPLIT SPLINE **Q**

Click on the Split Spline tool then click on an existing spline point (white circle) to break the track at that point.

SPLINE PROPERTIES **P**

Select the Properties tool then click on a spline. Add a name to the spline so you can use "Find Object" to locate this spline again. You can also set or change the layer.

ADVANCED SPLINE MANAGEMENT

HOTKEY = ⇧ Shift + F3

Click on the Advanced Menu to access additional tools to manage splines.

SPLINE HEIGHT **H**

The Spline Height tool is used to raise or lower the height of splines such as catenaries or road bridges. Click on Spline Height then click-🖱 + hold on a spline point (the white circle) and drag the mouse forward or backwards.

DELETE SPLINE POINT **X**

Click-LMB on Delete Spline Point and then click on a white spline circle to remove unwanted spline points. You cannot delete an end spline point, but you can delete the whole section.

INSERT SPLINE POINT | I |

Click-LMB on Insert Spline Point then click between two existing spline points. Notice that a new spline point is created. You may need to zoom in closer in order to insert a new spline point.

SMOOTH SPLINE | S |

Use Spline Height | H | to raise a road spline points above the ground. Click to select the Smooth Spline tool then click on the raised spline section. The terrain is raised up to meet the road. To make a few minor adjustments, click again on the road a few more times.

GET VERTEX HEIGHT

Click on the Get Vertex Height and click on a spline point. The height is displayed in the Height Value box.

APPLY VERTEX HEIGHT

Click on Apply Vertex Height then click on another spline point. The spline point is raised to the same height as your first vertex. This is useful to ensure level spline segments.
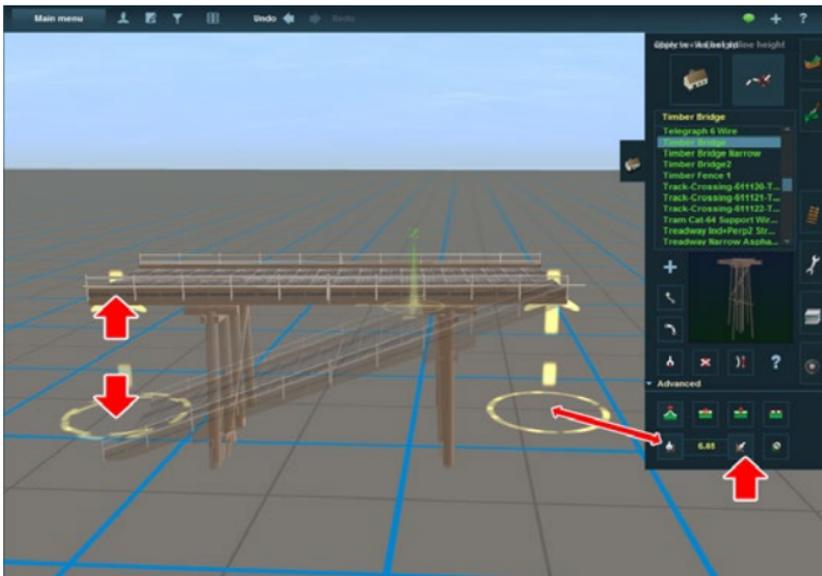
TRACK MENU

HOTKEY = **F4**

The Track Menu is split into three main sections. Track Tools, Trackside Objects and Track Management Objects

TRACK MODE TOOLS

Laying track, placing signals and creating turnouts can be the key to running a successful T:ANE Driver Session. Track sections in T:ANE are made up of flexible length track pieces created by placing 2 spline points. This "flexi-track" system makes laying any lengths of track extremely simple. Select the Track Menu **F4** and the default selection will be Track Mode **T** .
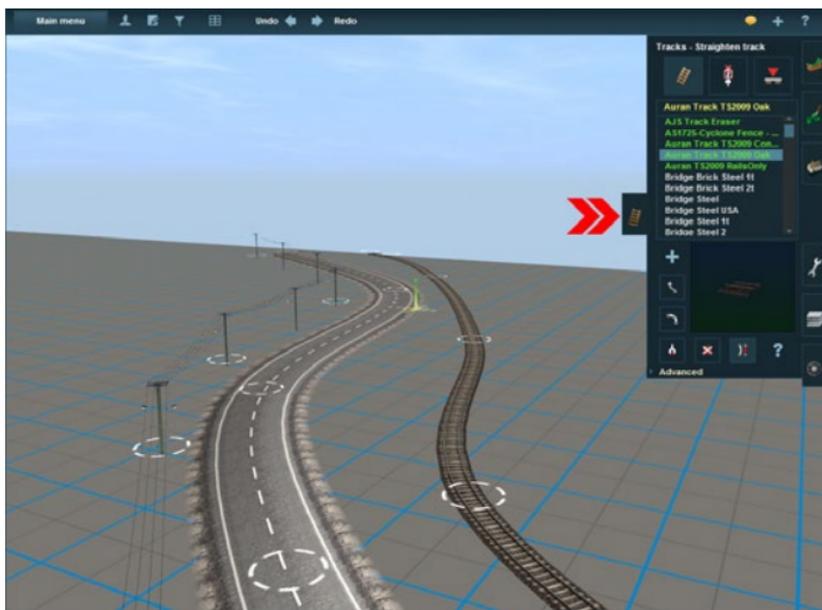
ADD TRACK **A**

Select Add Track tool then select a section of track from the scrollable list. Click on the baseboard where you want to anchor your starting point then click again a short distance away to place another spline point. A straight section of track has now been laid between the two spline points.

To extend the track further, click again on the last spline point (the white circle), then click once more nearby to extend the track. Unless all three spline points are exactly in a straight line, you will notice that the track is now curved.

MOVE TRACK [M]

To bend the track in any direction, select the Move Track tool and then click-🖱 + drag on one of the spline point circles. Drag your mouse around the terrain and notice how the track bends.

TIP ▶ *The shape of the curve is also affected by how close the spline point you are pulling is to the next spline points.*

STRAIGHTEN TRACK [B]
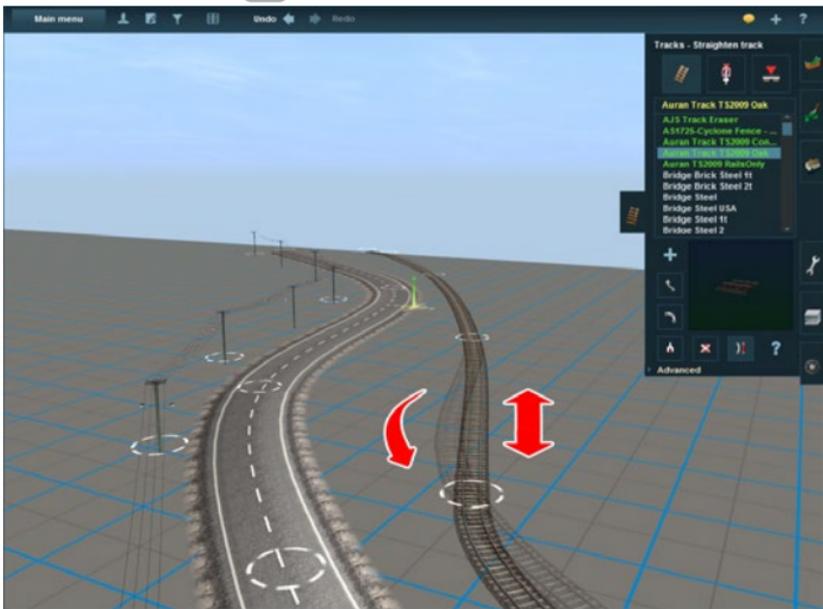
Click on Straighten Track and then click on a curved section of laid track. Notice that the section of track straightens between the two spline points and the curvature of the next track segment is also affected.

NOTE ▶ *Double track cannot be straightened.*

GET TRACK G

Click on Get Track and then click on the track in the 3D world. The track you clicked on is now highlighted in the list and showing in the Preview window. You are also now in "Add" mode ready to place that track type.

DELETE TRACK D

Click on Delete Track then click on the section of track to delete.

NOTE ▶ *Any trackside objects attached to a track segment will be deleted when the track is deleted.*

SPLIT SPLINE Q

Click on the Split Spline tool and click on a middle spline point (white circle) in the track. The track breaks in two at that point.
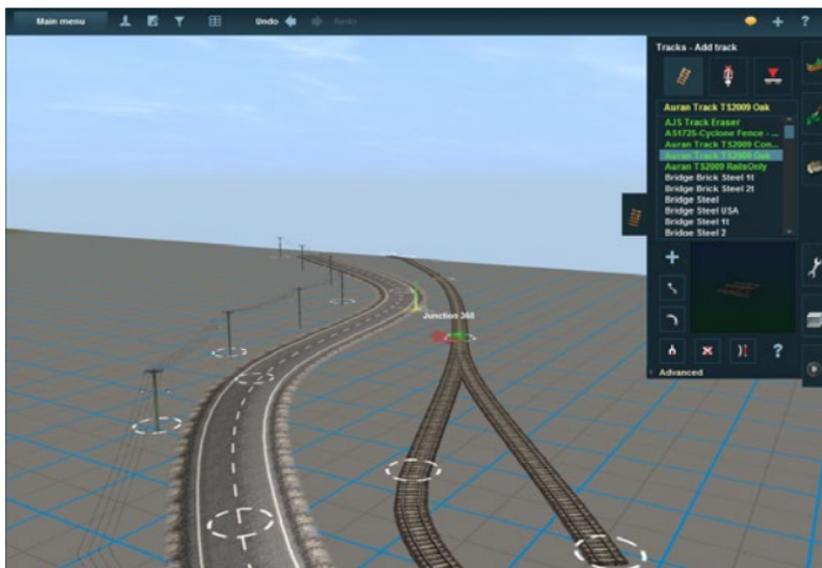
EDIT PROPERTIES

This can be used to name the track section, set the layer and also set the track "condition". This determines how much movement the trains will show when in Driver. Use a setting of 1 for very poor track and 100 for perfect track.

ADVANCED TRACK MODE

HOTKEY = [⇧ Shift] + [F4]

In T:ANE, there are two ways you can lay track. Either lay the track and bring the land up to meet it, or create the land, then lay your track over it. Click on the Advanced button to drop down the Advanced Track Menu.
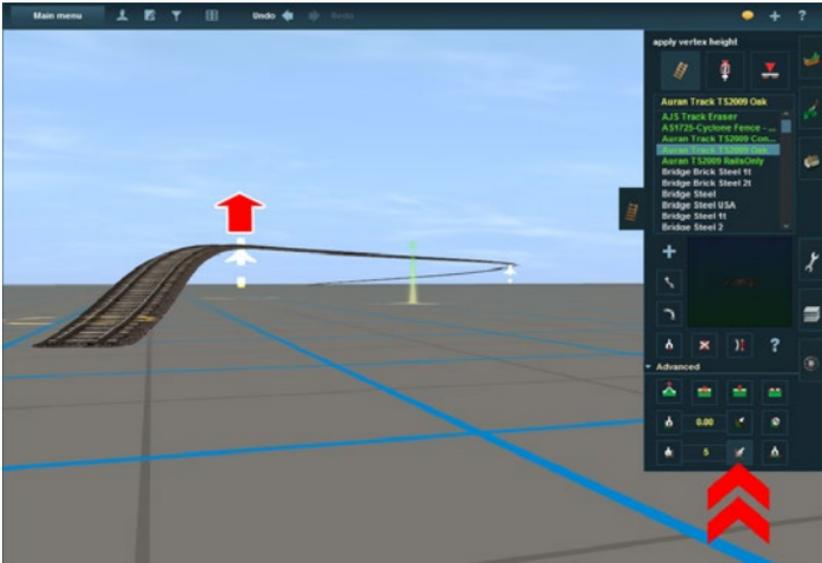
ADJUST SPLINE HEIGHT [H]

Lay some track then Click on the Adjust Spline Height tool (as shown above in the Advanced Track Menu). Click and drag forward and back on a track spline point to raise and lower the point. The track spline points have arrows attached to show the height of the track above the ground.

SMOOTH SPLINE HEIGHT [S]

Select the Smooth Spline Height. Click on the raised track section and the ground is instantly raised up to meet the track. To make a few minor adjustments, click again on the track a few more times between each pair of spline points.

DELETE SPLINE POINT [X]

Click on the Delete Spline Point and click on a track spline point (not a spline end point as they cannot be deleted). Notice that the spline point is removed and the curvature is also affected.

TIP *Use Delete Track to delete the final stretch of a track.*

INSERT SPLINE POINT [I]

Click on Insert Spline Point to add a new spline point. The track curvature will be affected due to the new distance between spline points.

GET GRADIENT [J]

Select the Get Gradient and click on your raised track section between two track spline points. The gradient between those points is shown in the Gradient Value box as a percentage slope. The value 1 means 1% or "1 in100".

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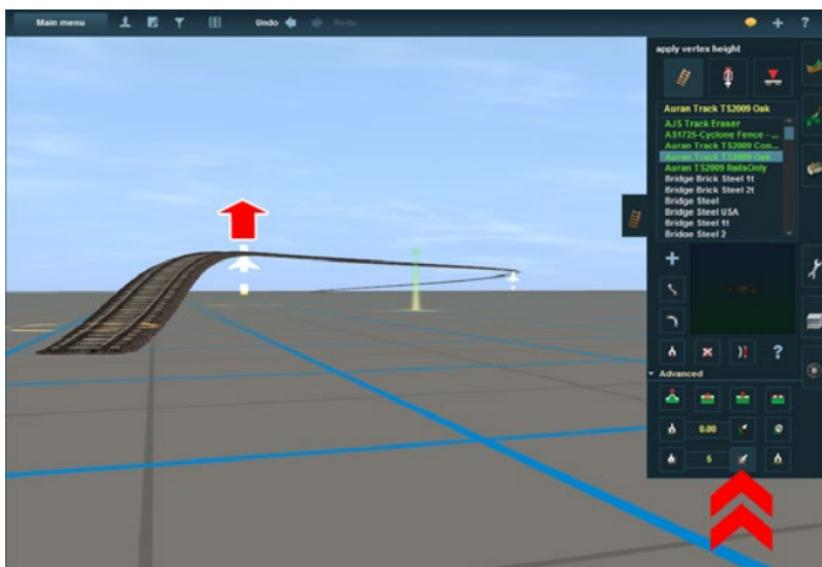
APPLY GRADIENT K

Enter a new gradient value in the Gradient Value text box, then click on Apply Gradient. Click the track near your first spline point to raise the track. Now click on Undo **Ctrl** + **Z** and then click near the 2nd spline point to appply the "reverse" gradient.

TIP *The gradient is always applied "away" from the spline point closest to where you click.*

REMOVE GRADIENT

Click on remove Gradient and then click on a track section to remove the gradient between two track points.

GET VERTEX HEIGHT

Click on the Get Vertex Height and click on the highest spline point on your track. The height is displayed in the Height Value box.

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APPLY VERTEX HEIGHT

Click on Apply Vertex Height then click on another spline point. The spline point is raised to the same height as your first vertex. This is useful for ensuring level track segments.

SHOW CURVE RADIUS

Click on Show Curve Radius and move your mouse along a track segment. The curve radius (measured in meters or feet) is shown next to your mouse cursor.

TIP *Each spline point "averages" the curve from the next section of track. Use Straighten Track to "end" a curve and stop any curve effect upon the adjoining segment.*

TRACKSIDE OBJECTS

Trackside objects are objects that are attached to the track and generally affect how trains operate. These include signals, speed signs and junction levers.
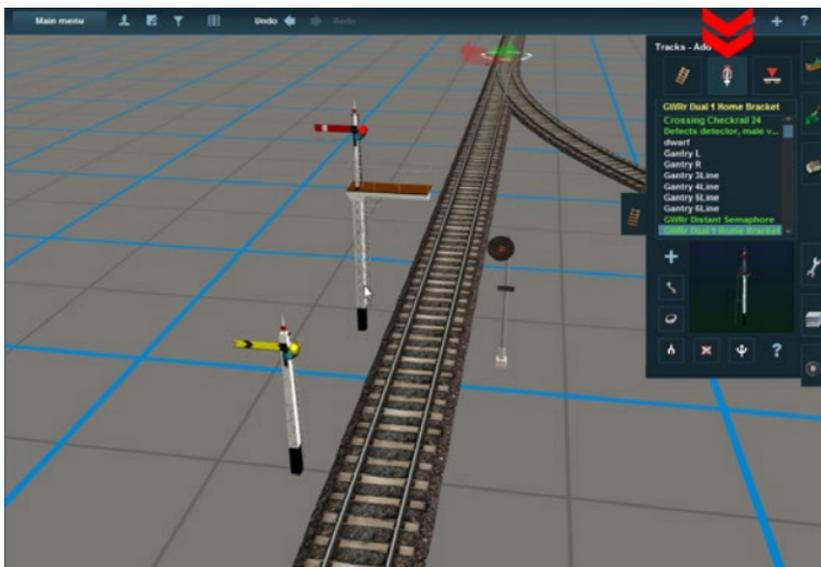
TRACKSIDE MODE Y

The second mode in the Track Menu is Trackside Mode. With the Track Tab F4 open, click on Trackside Mode to change the Track Tab menu to the Trackside Mode menu.

ADD OBJECT A

To add a trackside object click on the Add Object button. Select the object you wish to place from the list then click at one point of the track. Your object will be placed beside the track and will be "attached" to it. If you move the track the trackside object will move with it.

MOVE OBJECT [M]

Click on Move Object. Then click- 🖱 + hold on a Trackside Object on your track. Drag your mouse along the track to move the object to a different position.

ROTATE OBJECT [R]

To change the side of the track for a trackside object, click on the Rotate tool and click on the object. It will switch sides of the track and rotate 180 degrees. The default direction that a trackside object faces is controlled by the selection of Geographic region for the Route.

GET OBJECT [G]

Click on the Get Object tool and then click on an object already placed at the trackside. The object selected now appears in the selection window. Change the mode to Add Object [A] and click again at another point on the track where you wish to place another instance of the newly selected object.
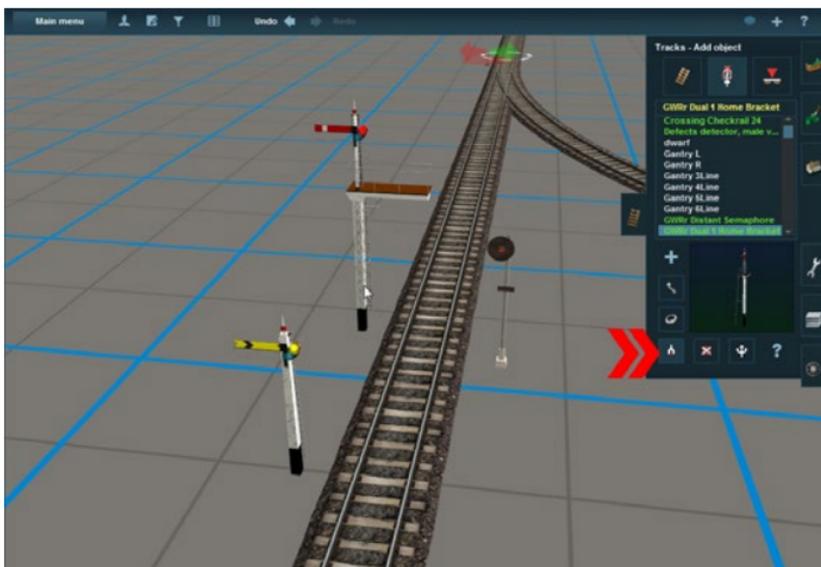
DELETE OBJECT **D**

Select Delete Object then click to delete a trackside object. Continue clicking to delete a number of objects. If you click on the wrong object, click on Undo **Ctrl** + **Z** to undo the last action and replace the last deleted object.

JUNCTION DIRECTION **J**

Each turnout should have a switch lever attached to it with a green and red arrow to indicate the default direction. To change the default direction of travel in the Driver module, click on the Junction Direction tool and then click on the direction arrows.You can also make 3-way turnouts by simply adding a third track to the turnout. Levers will now show three direction arrows.

NOTE *Junction direction changes should generally be made in the Session Layer.*
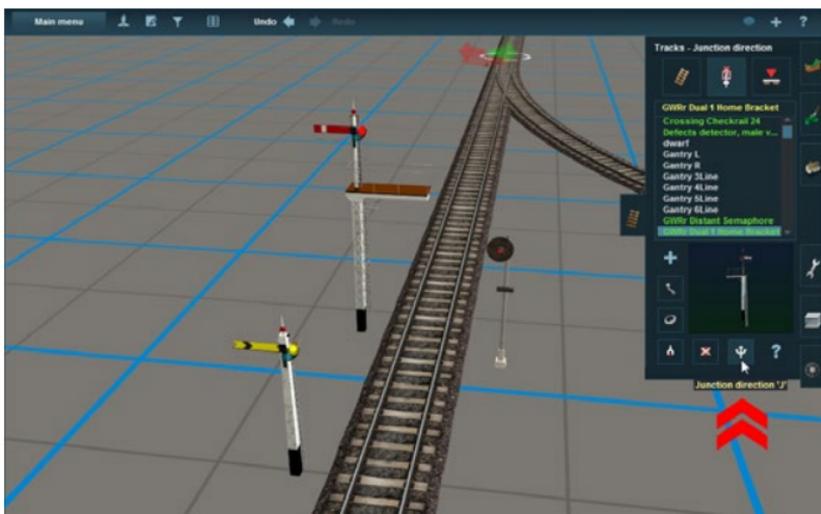
DEFINE NAME **N**

Next, select the Define Name tool and click again on the turnout. Type a name for the turnout, click the check icon to save the name and proceed. This name can then be searched for using the Find Object Tool.

TRACKMARKS AND TRIGGERS

HOTKEY = $\boxed{V}$

The third mode in the Track Menu is Trackmark Mode. Trackmark mode is used for the management of Trackmarks, Triggers and other track-based objects such as Priority Markers.

These markers are used in setting up the Rules for a Session, which allows you to customise operations for your Route.

Click on the Trackmark Mode to change the Track Tab menu to the Trackmark Mode menu.

NOTE ▶ *In this section, Trackmark refers also to Trigger or Marker.*
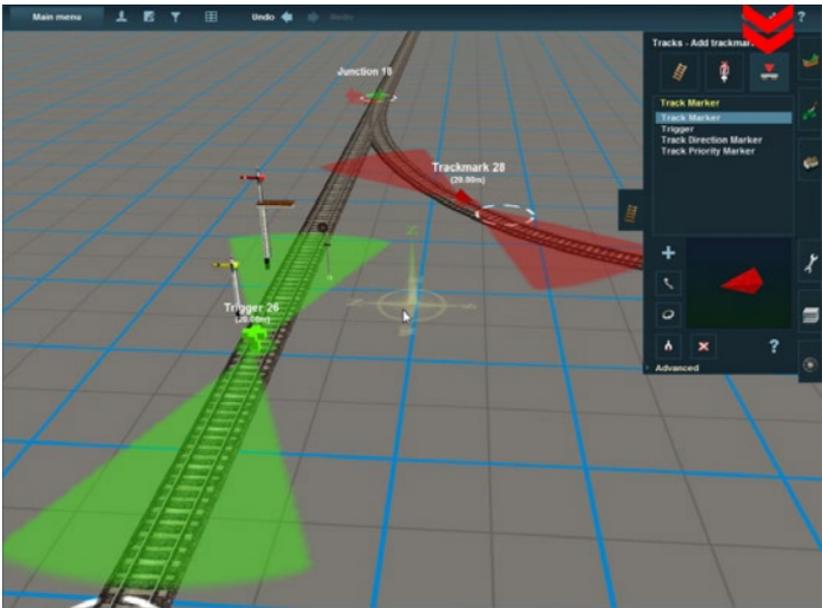
TRACKMARKS

Trackmarks highlight specific points out on the track in a Route. They are named and then used in Rule building to guide AI Drivers or players.

ADD TRACKMARK A

To add a Trackmark, click on the Add Trackmark button then click at a point on the track. A trackmark will be "attached" to the track. If you move the track the trackmark will move with it.

NOTE *Trackmarks are not visible when you are operating your Route in Driver.*
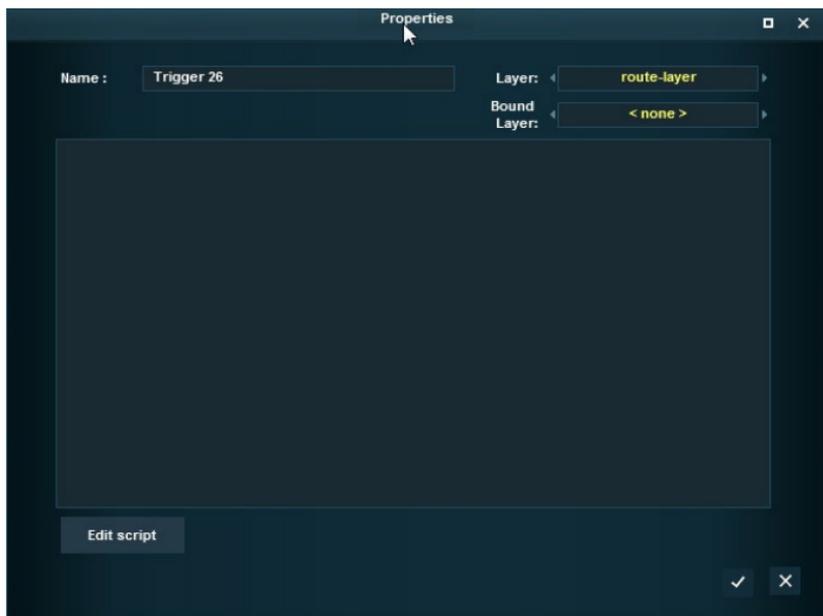
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MOVE TRACKMARK M

Click on Move Trackmark. Then click- + hold on a Trackmark Object on your track. Drag your mouse along the track to move the object to a different position.

ROTATE TRACKMARK R

Select Rotate Trackmark and the default direction of the Trackmark is reversed.

GET TRACKMARK `G`

Click on the Get Trackmark tool and then click on a trackmark already placed at the track. Notice that a trackmark now appears in the selection window.

Change the mode to Add Object `A` and click again at another point on the track where you wish to place another copy of the trackmark.

DELETE TRACKMARK `D`

Select Delete Trackmark then click on a trackmark to delete it.

DEFINE NAME `N`

To name your trackmarks so that you can find them again later on and use them in rules, click on Define Name. Then click on the trackmark and a dialogue box comes up where you can name the trackmark.

FINDING A TRACKMARK

To find the trackmark, use the Find Object `Ctrl` + `F` , using the Type: Trackside to shorten the list. Select the trackmark from the list and the screen is re-centered.
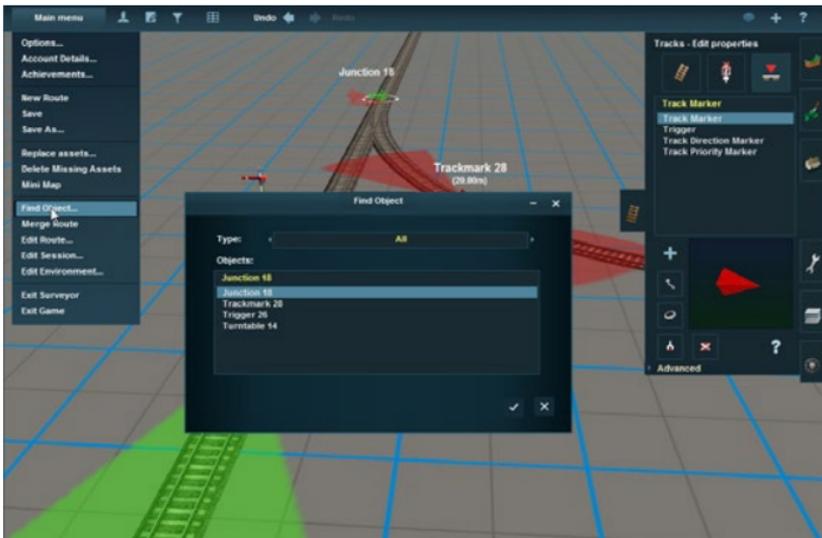
TRIGGERS

Triggers are similar to Trackmarks and are used in conjunction with Rules to trigger an event such as a message being displayed, sounding a horn or giving commands to an AI Driver.

A radius of a trigger is used to determine the area of effect a rule will be triggered. The "radius" actually extends only along the current stretch of track and not sideways.

NOTE *Obstructions on the track such as a junction may disrupt the trigger radius.*
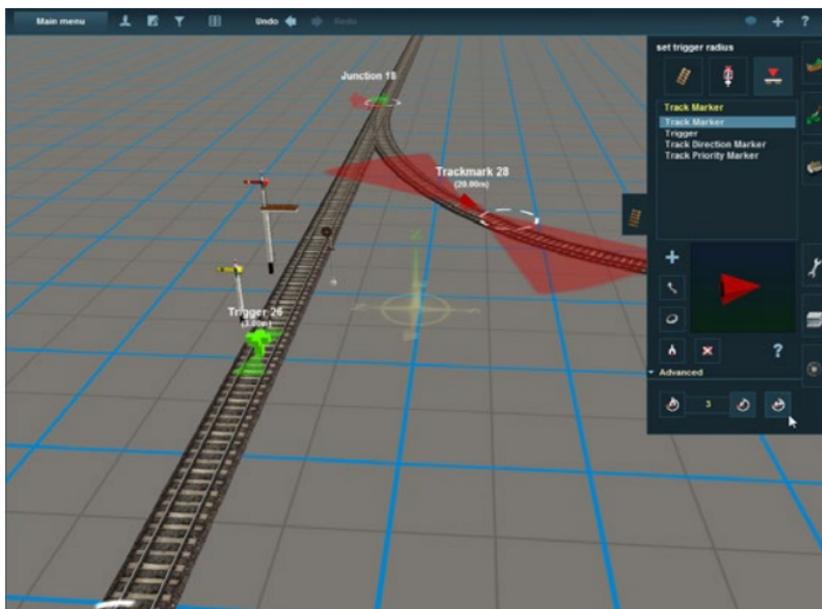
DIRECTION TRACKMARKS

Direction trackmarks are yellow and are used to indicate to AI Drivers which direction is permitted on a section of track. By placing direction trackmarks carefully, the AI trains can be restricted from certain tracks or forced to take a particular path.

TIP *Use for controlling Northbound or Southbound traffic.*

PRIORITY TRACKMARKS

Priority trackmarks are purple and are used to indicate to the AI Driver the "Priority level" of a section of track. Trains and track sections need to match in priority value. i.e. A Priority 2 Driver will first attempt to path along a Priority 2 track section.

(NOTE) *The priority system is not an explicit path setting mechanism as a driver will still find a path over tracks of differing priorities if the priority track is blocked.*

ADVANCED TRIGGER MANAGEMENT

The advanced settings of the Trackmark tools menu are used to set the radius of triggers. The radius defines the scope of the trigger and is explained in the previous section.

GET RADIUS

Click on the Get Radius tool and then click on a trigger. The trigger's radius will now be in the text field adjacent to the button.

SET RADIUS

Click on Apply Radius then click on a trigger to apply the value in the radius field to that trigger.

ADJUST RADIUS

Click on Adjust Radius then click on a trigger and drag the mouse to change the trigger radius.
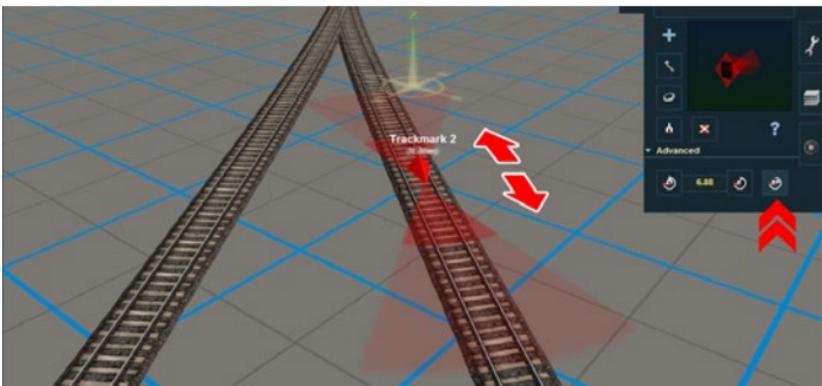
TOOLS MENU

HOTKEY = **F5**

The Tools Menu offers some additional tools for helping to create your T:ANE world.

RULER MANAGEMENT TOOLS

The ruler tool is used to measure track lengths, radius when laying curves, or even the size of your basement.
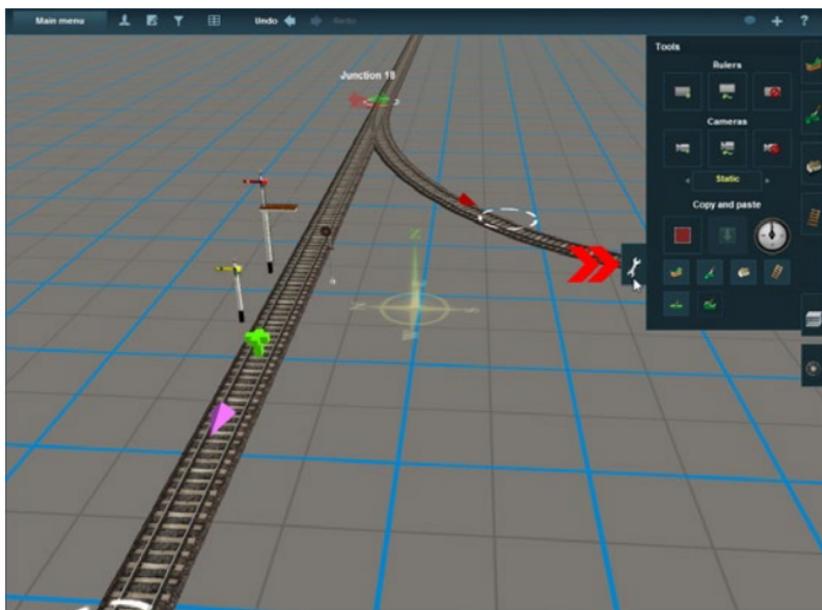
CHANGING THE SCALE OF THE RULER

To change the scale of the ruler, go into the Surveyor Main Menu and choose Edit Route. Change the units to real Scale, HO, OO or whichever scale you prefer.

MOVE RULER **T**

To move the ruler, click on Move Ruler and then click- + hold on either end of a ruler and then drag it to move that end of the ruler.

ADD RULER `R`

To add a ruler, click on Add Ruler, then click at your chosen point in your terrain and drag the mouse to the other end point for the ruler and release the mouse button.
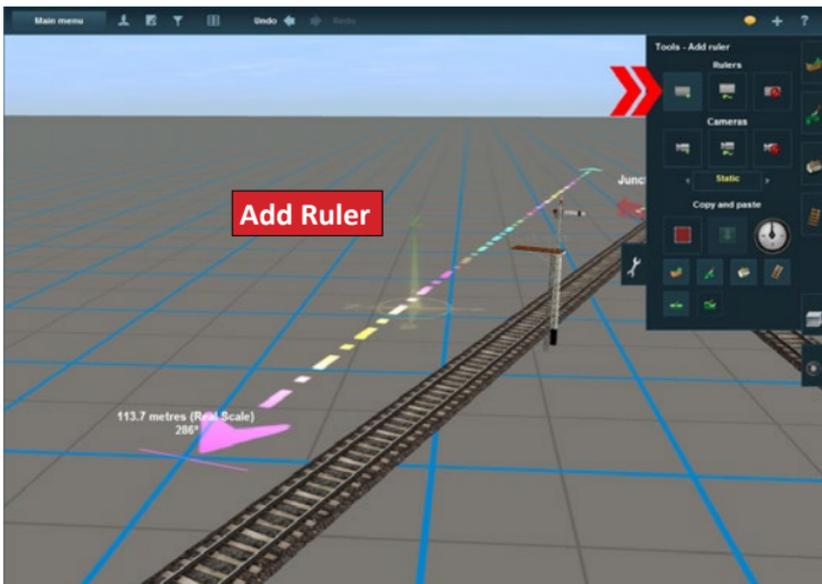
DELETE RULE `Y`

Use Delete Ruler to delete the ruler. Leaving a large number of rulers on your Route can cause severe slowdowns, so make sure you delete them when they are no longer necessary.

Camera Management Tools

Use "Trackside" cameras to focus on a section of track. These cameras are then triggered by approaching trains.

PLACE CAMERA `A`

Maneuver your camera to where you want to place the camera. Click on Place Camera and notice that Move Camera is now highlighted. Use 🖱 and arrow keys to move around.

When your camera is in the correct position, Click on Place Camera. Mousewheel to zoom out and see the camera object in the 3D world

SELECT CAMERA

Click on the arrows in the middle of the tool list to switch between Static and Tracking camera mode. Static mode will focus on one position as the train passes, while Tracking will pan to follow the train as it moves along the track.

A red camera indicates a static camera, and green indicates a tracking camera.

MOVE CAMERA **M**

Click on Move Camera then click on an existing camera in the world. You are now in Move mode. Move your camera then Click on Place Camera when you are ready to lock the camera in position.

DELETE CAMERA **D**

To delete an unwanted camera, select Delete Camera and click on a 3D camera object.

TIP *Cameras have a "range" in Driver of 150-200 meters so careful placement is required.*

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COPYING AND PASTING TOOLS

Copy and paste tools allow large areas of terrain and associated scenery to be copied from one place to another.

SELECT AREA **B**

Click on Select Area and click and drag to create a rectangle around the area you wish to copy. The white box shows the area that will be copied.

PASTE MODE **P**

Click on Paste Mode and click- to navigate around your terrain to the new location. Click where you want the selection copied.

CANCEL SELECTION **X**

Click on Cancel Selection to cancel the selection.

PASTE HEIGHT, TEXTURES, OBJECTS OR TRACK

You can control which features are copied and which aren't.

You can copy Height, Textures, Objects or Splines, or any combination of these options. Use the "toggle" switches to decide which elements will be copied.
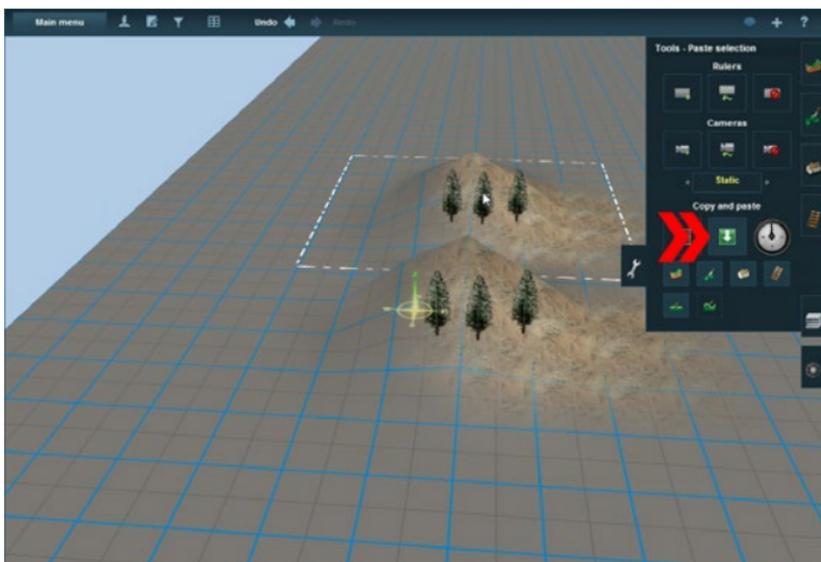
PASTE ROTATION [[ ] OR [ ]]

You can also rotate your selection prior to pasting by using the Paste Rotation dial.

RELATIVE HEIGHT [L] OR ABSOLUTE HEIGHT [S]

You can paste either relative or absolute heights by clicking on either icon to toggle between them. Relative height will take the copy height and add it to your current height. Absolute will paste the copy height regardless of the current terrain height. Choose wisely, but if you make a mistake, use Undo.

LAYERS MENU

HOTKEY = $\boxed{\textbf{F6}}$

In short, the Route Layer is your "world" and your Session Layers are the different "interactive" components that will change from one Session to the next.

Using Layers effectively will help make your Session creation easier to manage.
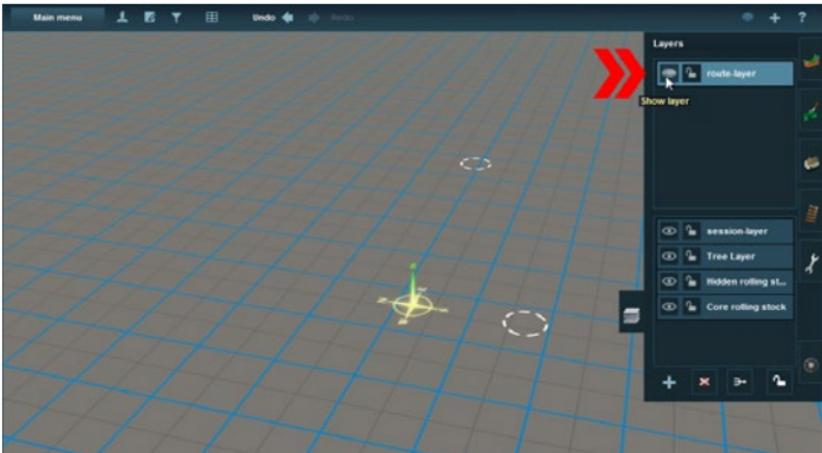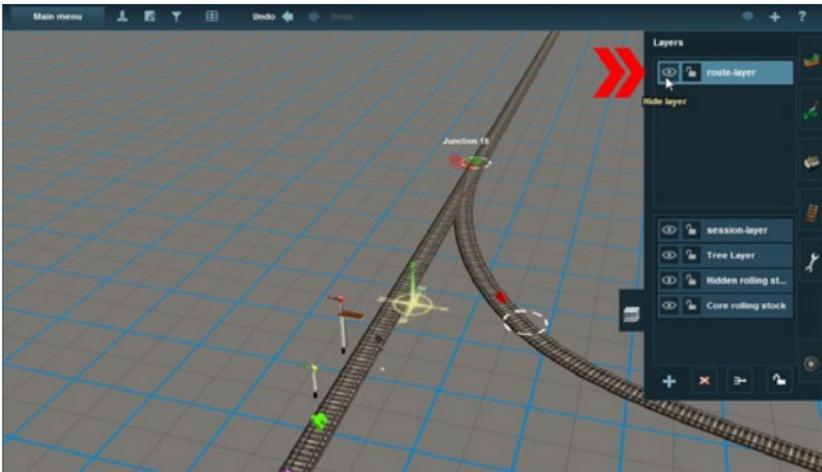
Working with Layers

When you create a new Route, you are by default adding objects to the Route layer and so they will be present in any Session created for the Route.

To switch to working in a Session layer, open the Layers tab **F6** and click on "Session-layer". Objects you add to the world will now be placed in the layer called "Session-layer". You can add as many layers as you like, so you could have a "Tree Layer" or perhaps a "Hidden" Layer which you then use a script to "Show Layer" at some point during a Session.

Place a scenery object on a new Route, click on the Edit Properties button **N**. You will notice that besides an option to name the object, you can also see which layer the object is on. To move the object to another layer scroll to that layer by using the spinners on either side of the Layer name.

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ADD LAYER **A**

You can add extra layers by clicking on the Add Layer button. Enter a name for the new layer and select Route level or Session level in the popup dialog and accept.

TIP *Layers can be dragged between Route and Session level in the Layers panel.*

DELETE LAYER **D**

Select a layer and click on the Delete Layer button to remove it.

MERGE LAYERS **M**

Select a layer and click on Merge Layers button. A popup gives you the option to choose a specific layer to merge with. This merges every object in the Layer into the new Layer.

TIP *Individual items that are already placed in the world cab be added to a Layer by using the "Bound Layer" option. This is found under Properties (the ? button in each object related Tool Tab).*

TRAINS MENU

HOTKEY = **F7**

The Trains Menu has two Modes. Vehicle Mode to place locos and rolling stock on the tracks and Train Mode to manage and place consists on the tracks.
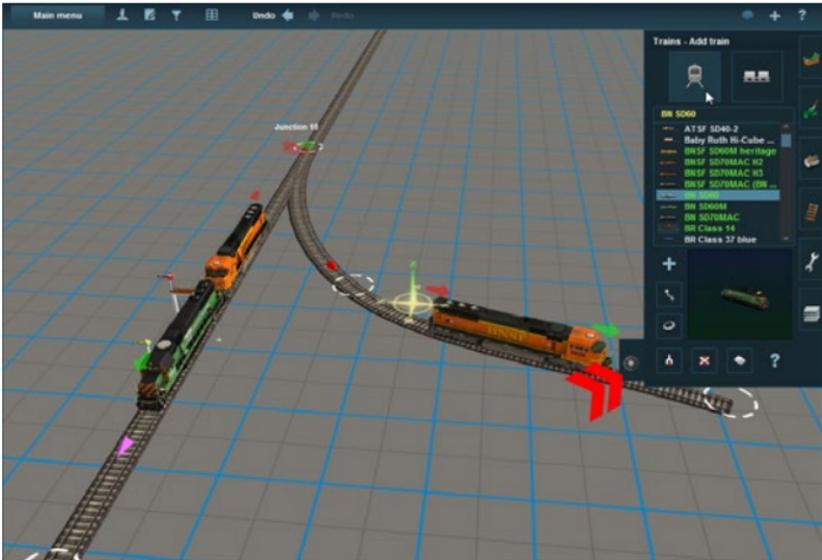
VEHICLE MODE **T**

Click on the Vehicle Mode button to view a list of all engines and rolling stock in the scrollable list. The list can be filtered using the Content Search Filter.

ADD TRAIN **A**

Click on Add Train then select a "vehicle" from the list (i.e. locomotive or rolling stock asset). A 3D version of the asset appears in the Train Viewer window in the bottom of the tab.

To place the vehicle in the 3D world, Click on your desired location on the track.

Select additional items and Click on one end or the other of the

current train to add more engines or rolling stock. The Red and Green arrows adjust to mark the ends of the consist. The Green arrow indicates which direction the consist will travel when moved forward when operated in Driver.
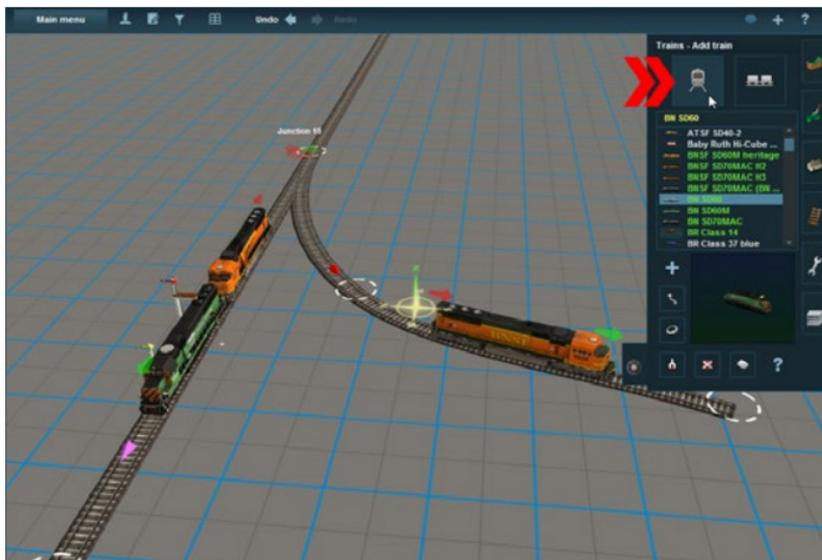
If you Click too far away from the end of the consist, you will begin a new consist.

TIP *If you want to join the two consists together, use the Move tool.*

MOVE TRAIN **M**

Click on Move Train then click- + hold a train car. You can then drag the mouse to move the traincar anywhere that there is track. You can move a whole train from one track to another using Move.

ROTATE TRAIN **R**

Click on Rotate Train then click on any individual car in a consist to reverse the direction of that car. This does not change the "direction heading" (which is changed in Train Mode).

GET TRAIN G

Click on Get Train then click on any car in any consist on the Route. The car selected will be highlighted in the list in the Trains tab and displayed in the Train Viewer window.

DELETE TRAIN D

Click on Delete Train then click on any engine or car in a consist to delete the car.

TIP *Use the Move tool to rejoin the remaining cars into a single consist.*

DECOUPLE CARRIAGE X

Click on Decouple Carriage and then move the cursor to a point near the connection between two items in a consist until a red coupler icon appears. Click on the coupler and it will open to indicate the break in the coupler. Additional Green and Red arrows will appear above the point of uncoupling to mark off the two consists that have now been made from the one original consist.

EDIT PROPERTIES [P]

Click on Edit Properties to configure any traincar.

A default name is automatically provided. The name persists only for this particular Session and can be edited and saved. Change the running number for an engine or car by clicking on the underlined text.

Additional scripted components can be configured for rolling stock that have script support added.
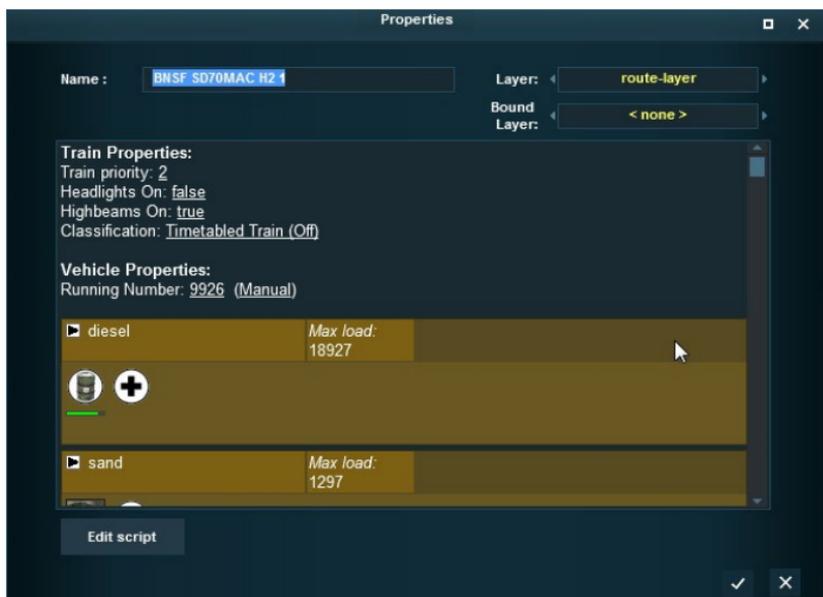
TRAIN MODE [C]

Click on the Train Mode button to enable the placing of complete consists (pre-built trains) in a single click.

ADD CONSIST [A]

Click on Add Consist to add one of your chosen consists to your Route. Click at any point on the track to place the complete consist on the track. There must be sufficient room on the track to place the train.

MOVE CONSIST `M`

Click on Move Consist to enable you to move any consist on your Route along the track to adjust its starting position. click- 🖱 + hold on any consist to move it back and forth along the track.

ROTATE CONSIST `R`

Click on Rotate Consist then click on the consist to change the direction of the whole consist. The Red and Green arrows will also switch positions to reflect the rotation.

TIP *Use the Rotate tool in the Vehicle Mode to rotate just one car at a time.*

DELETE CONSIST `D`

Click on the Delete Consist button then click on any consist to delete it from the tracks.

DECOUPLE CARRIAGE $\boxed{\text{X}}$

Click on the Decouple Carriage button then click on the coupler icon that appears between each car in a consist. This will split the consist into two new consists.

CHANGE HEADING $\boxed{\text{H}}$

Click on the Change Heading button then click on any consist to reverse the Green and Red direction arrows. Note that this sets the forward direction when the consist is started in Driver mode. Use Rotate to reverse the physical direction of the consist.
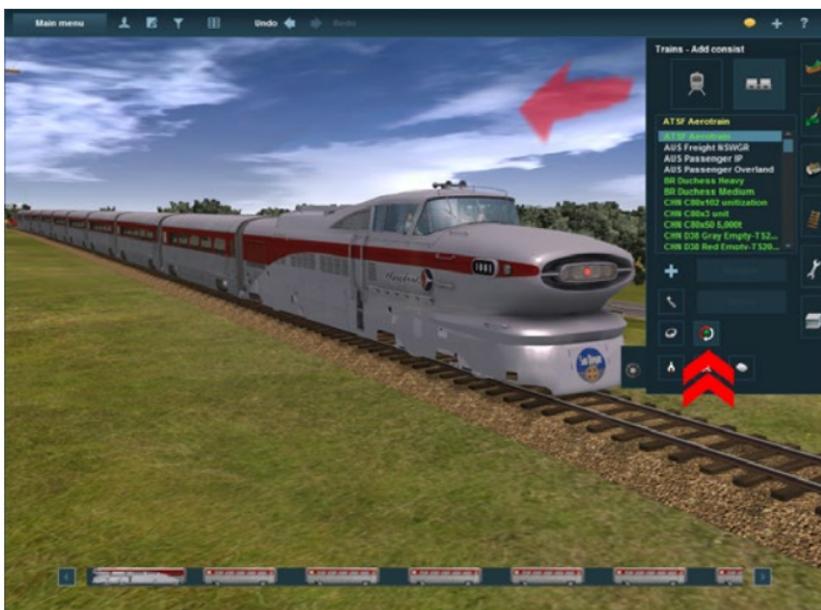
GET CONSIST $\boxed{\text{G}}$

Click on Get Consist then click on a train in the 3D world. Enter a name for the new consist and it is added to the consist list.

Place vehicles using the Vehicle tool, and create new consists for use on many different Routes.

TIP *When you name a consist, that name persists across other Routes and Sessions and becomes available in the Quickdrive Rule.*

RENAME CONSIST TEMPLATE

Click on the Rename Consist button to rename the consist currently selected in the list.

DELETE CONSIST TEMPLATE

Click on the Delete Consist button to delete the consist currently selected in the list. A confirmation window will display to confirm the deletion. This deletes the named consist from the list, not the train on the tracks.

EDIT ENVIRONMENT TOOLS

The Environment Tools Menu is accessed from the Surveyor Main Menu by selecting "Edit Environment...".
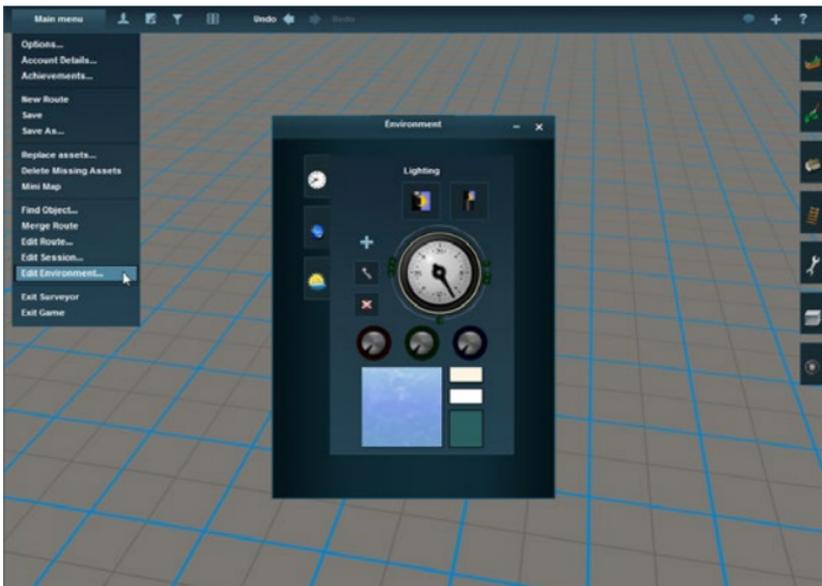
Options are available for you to:

Choose the skybox to make it appear cloudy or sunny.

Adjust the weather from rain to snow to clear.

Change the wind speed which affects the Speedtrees.

Adjust the height of the snowline for supported assets.

Adjust the time of year to affect which version of the seasonal assets appear.

Customise the lighting throughout the day.

Customise the water color and appearance.

Adjust the road traffic.

Change the world origin.

DYNAMIC LIGHTING

The Lighting panel is used to set the colors of the sky and water at various times throughout the day.

TIME OF DAY [+] OR [−]

To view the current lighting setting throughout the day, click- + hold and drag the hour hand on the clock.

To adjust the lighting, select one of the small red lights around the

outside ("color control points") then use the three-color RGB dials to adjust the color tint for that time of day. The lighting for each color control point is applied at the position on the 24 hour clock and effects are blended between one setting and the next as the clock advances.

SKY COLOR PREVIEW

Click the Sky Preview window and a white line appears at the bottom of the window. Click in the center and the white line moves to the center. Click at the top of the window and it moves to the top. These are the three-color bands in the sky that you can adjust using the RGB dials.

NOTE *You must have one of the green buttons on the clock selected to be able to select a band in the sky.*

176 Click on the bottom of the sky preview. Move the three RGB color dials and notice the sky colors change. Repeat this for the middle and upper bands. There are three other color options that can be adjusted.
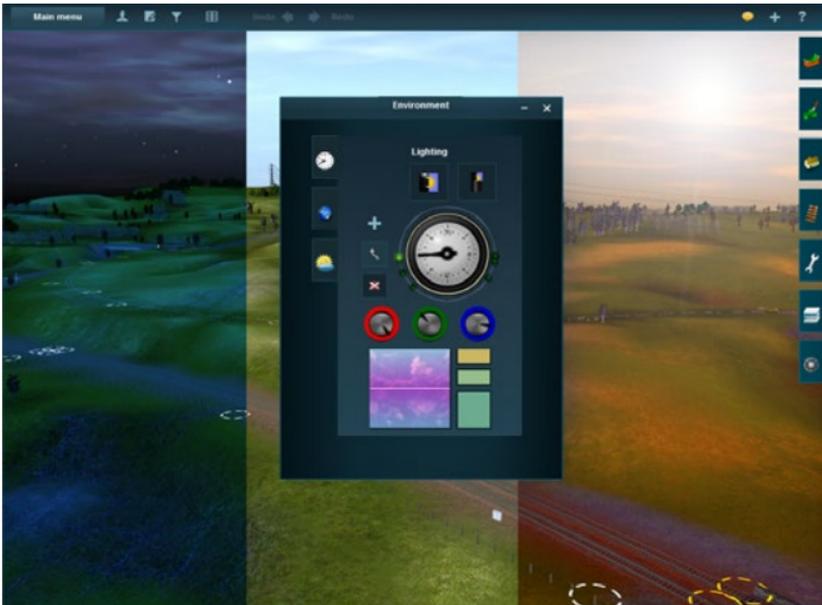
AMBIENT COLOR PREVIEW

Click on the top Ambient Color Preview box and adjust the RGB values to set the directional lighting. This primarily affects the color hue of buildings and other objects.

SUN COLOR PREVIEW

Click on the middle Sun Color Preview box and adjust the RGB values. This alters the ambient lighting, primarily affecting the terrain.

WATER COLOR PREVIEW

1 Click on the lower Water Color Preview box and adjust the RGB values. This alters the color of areas of water.

ADD CLOCK **A**

2 To add new green lights, select the Add Clock tool and click on the outer rim of the clock to add new "lights" as required.

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MOVE CLOCK | M |

2 You can also select Move Clock to move the lights to a new time slot by dragging them around the clock.

DELETE CLOCK | D |

2 Click on Delete Clock to delete the green lights by Clicking on them.

RESET COLORS

3 If you wish to reset the RGB colors to the defaults used by T:ANE, click on the Reset Colors button.

DIURNAL CYCLE

4 To preview the full 24 hour cycle in just 30 seconds, click on the Diurnal Cycle button. Click again to stop the cycle at any time.

You can also manually drag the hour hand to see how the colors blend over time.

LOCATION TOOLS
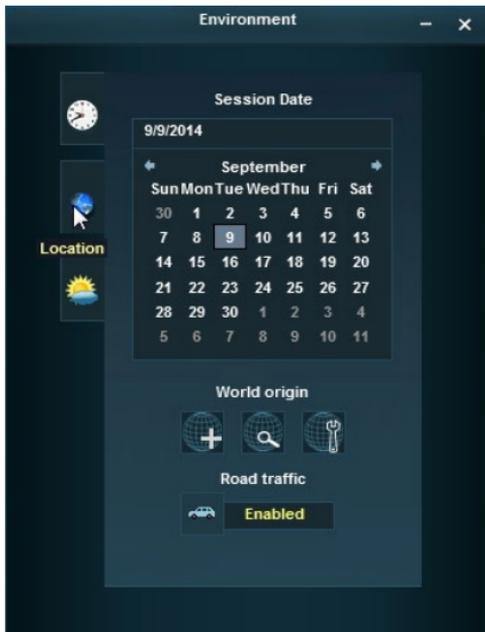
The second tab, signified by the globe icon, contains the World Origin, Session Date and Road Traffic settings. The World Origin is a marker on your Route to set the latitude, longitude and altitude at that location. This adjusts the sun position with a higher latitude, resulting in a lower winter sun position. The altitude setting controls the snow variation in objects where snow is seasonally supported. The default snowline is set at 2000m.

ADD/MOVE WORLD ORIGIN O

Click on Add/Move World Origin and then click anywhere on your world to add the World Origin. click- + hold to move it around. Placing the world origin enables the next two options.

FIND WORLD ORIGIN F

Click on Find World Origin and the map view will be centered on the World Origin.

EDIT WORLD ORIGIN E

Click on Edit World Origin to edit the latitude, longitude and altitude. Choose a date to set the time of year to control the appearance of seasonal variation in supported scenery.
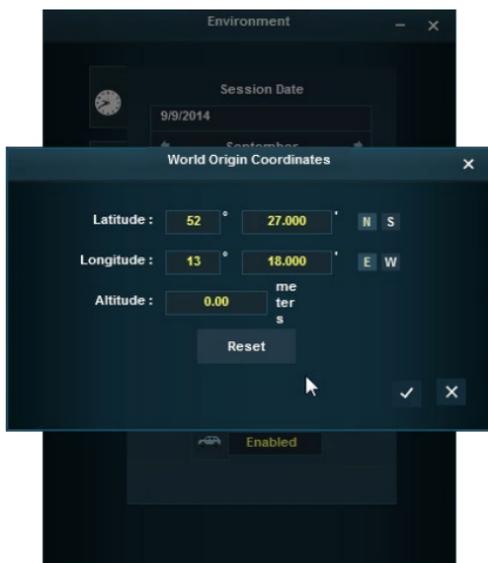
ENVIRONMENT TOOLS

The third Environment tab controls the weather, sky and water.

The Weather Control [[ ] OR [ ]] slider shows what your Route will look like in rain (move the slider left) or snow (move the slider right). Use the Weather Rule in Edit Session to customize the weather in your Session.

The Sky Selection box provides a range of cloud cover options. Scroll through the list and click on any option to apply that skybox to the world.

The Water text box works in the same manner. The overall appearance of water is affected by the choice of sky and by the lighting conditions set in the Time tab.

You can also change the wind strength, and edit the altitude of the snow line. Wind strength will affect the movement of Speedtrees, and Snowline height will affect which version of seasonal assets are used.

CUSTOMISING YOUR SESSION

INTRODUCTION

One of the most powerful features of T:ANE is the ability to customize almost every aspect of a Session by using powerful "Rules". T:ANE ships with more than 100 Rules to get you started, and like with other assets, new Rules become available regularly through the DLS.

Rules utilize the TrainzScript programming language and provide access for users without requiring any programming skills the ability to adjust various parameters in a Session.

These parameters include pretty much any customisable aspect of the Session including which Drivers are assigned to which trains, the Driver Commands they will follow, the weather state, the driving control method available, the industry production rates, camera controls and much more.

Rules operate in a "Hierarchy" so a Rule can be configured to operate only when a particular train hits a trigger, or after a certain

event has occurred. Messages can be displayed, HTML pages and sound files provided and scoring systems implemented based upon what the Session user does (or doesn't do).

Rules, together with the "Edit Session" menu, provide a totally open-ended system of customisation with almost no limit to what can be achieved

NOTE *While Rules can be a little daunting at first, with perseverance and practice, using Rules will unlock a whole new level of enjoyment for many Trainz fans.*

EDIT SESSION

Click on Edit Session on the Surveyor Menu Bar to open the Edit Session interface. Here you can modify the properties associated with a Session, change the Session Name, add a Description, and configure each of the various Rules to be used in this Session.

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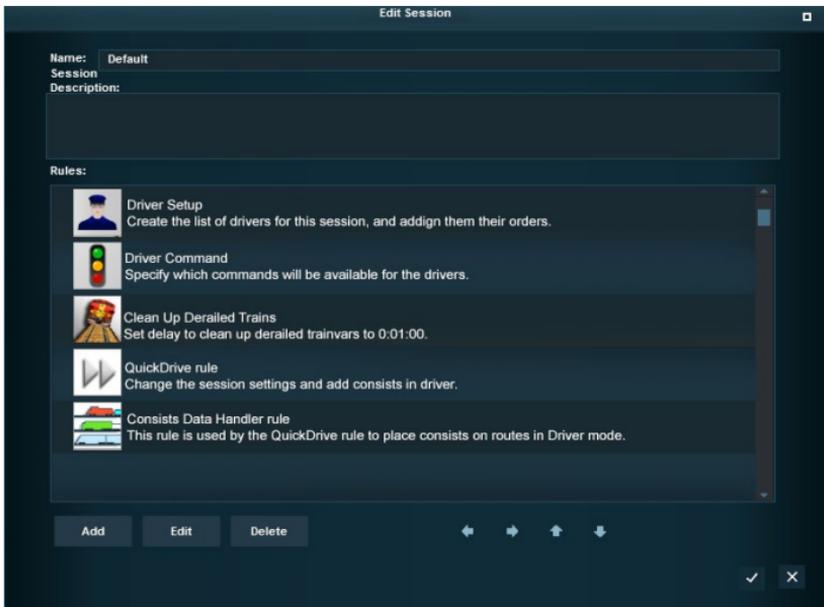
ADDING RULES

Click on "Add" to add a new Rule to the Session. Choose from the set of Rules listed and click the Checkmark to add the Rule to this Session. Once added, it is time to edit the Rule to customize it to your needs.

EDITING RULES

Each Rule generally provides a number of parameters that can be configured, depending on the type of Rule. The location of the Rule in the Hierarchy then determines when the Rule is triggered in the Driver Session.

Highlight a Rule in the list that you wish to modify and click on the "Edit" button to bring up the Rule Properties Window. This window shows which editable parameters are made available in the Rule.

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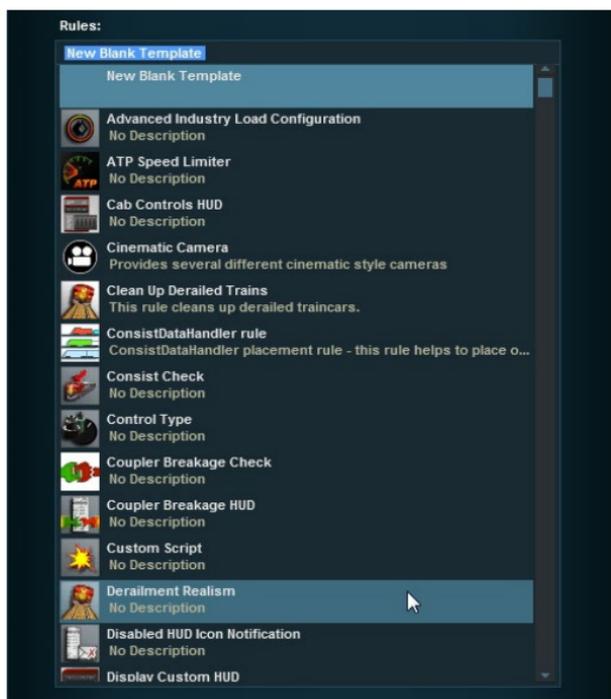
Click on the available "hyperlinks", and choose from the pop-up list of items, or type in an appropriate value or piece of text as required.

One of the easiest and most powerful Rules to use is the Driver Setup Rule which allows you to allocate Drivers to various locos and also add a list of Driver Commands for each Driver. The AI Drivers will then carry out these orders when you start the Driver Session.

You can also edit the name of any Rule by clicking on the text descriptor and typing in a descriptive name that helps you identify what the rule is configured to do (e.g. Cinemtatic Camera Intro and Cinemtatic Camera Ending).
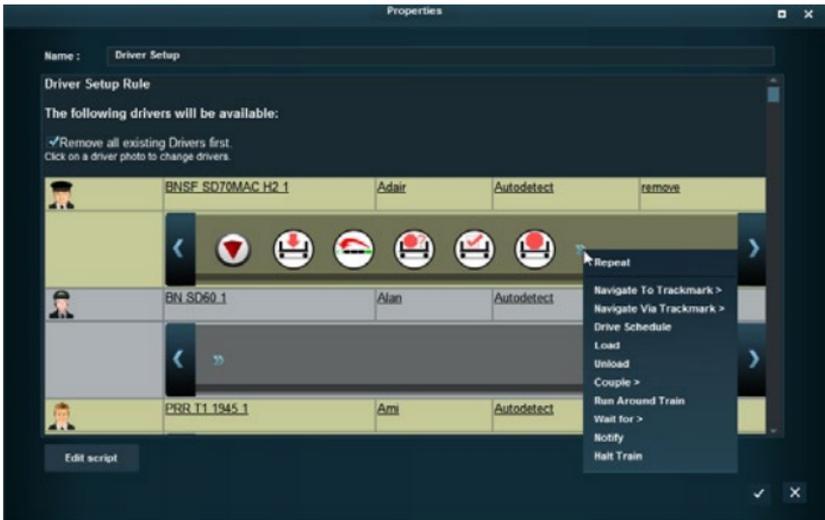
NOTE *It is possible to have multiple rules of the same type in a Session where each rule instance has its own configuration.*

MANAGING RULES

The Rules in your Rules List can be further manipulated by the four command buttons at the bottom of the Edit Session window (or using the 🖱-click menu).

The Outdent, Indent, Promote and Demote commands are used to order the Rules in a Hierarchy.

Some rules (like the Trigger Check Rule) require indented child rules immediately below them. This indent determines what needs to happen prior to the Trigger Check Rule being activated.

Other rules, like the Ordered List Rule, also require child rules as each rule will be executed in order one after the other.
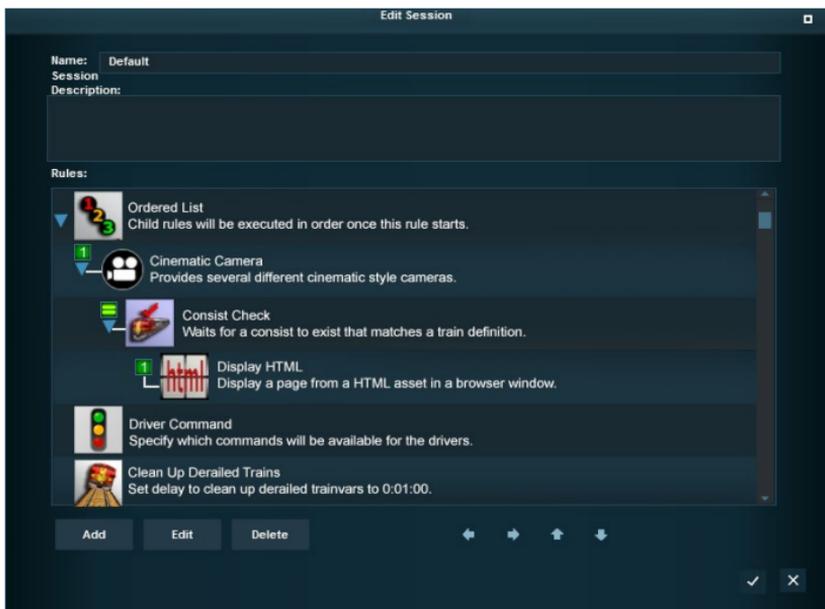
INDENT (RULE)

1 To Indent a Rule by one level, select the Rule then click on the "Indent" button. This moves the selected Rule one level "In" and makes the Rule dependent on the next higher Outdented Rule above it. The indented Rule will not be executed unless the Rule next up in the hierarchy is activated.

OUTDENT (RULE)

2 To Outdent a Rule by one level, select the Rule then click on the "Outdent" button. This removes the Rule from dependency upon the Rule it was Indented under.

NOTE *Be careful here as Rules subsequent to the Outdented Rule that are Indented will now only be executed if the Outdented Rule conditions are met. Use the "Promote" and "Demote" buttons to reorder the Rule List if this is not the desired outcome.*

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PROMOTE (RULE)

3 To Promote a Rule up the Rule List select the Rule then click on the "Promote" button. Once the Rule has reached the top of the Rule list, it can no longer be Promoted.

DEMOTE (RULE)

4 Select a Rule by click then click on the "Demote" button to move the Rule down the list.

DELETE (RULE)

5 To remove a Rule from the list select it then click the "Delete" button. A dialogue box pops up confirming the deletion. Click the "Yes" button to confirm the deletion or click the "No" button to cancel.

COPY AND PASTE

T:ANE introduces new functionality that assists the Session Creator to manipulate Rules and sets of Rules.

To copy a Rule, select the rule you want to copy then hit **Ctrl** + **C** . Move to the position you want to paste the rules and select the Rule ABOVE where you want to copy the Rule, then type **Ctrl** + **V** to paste.

To copy a group of Rules, use Shift-Select to select a sequential list of Rules or **Ctrl** -Select to select individual Rules one at a time.

Use **Ctrl** + **C** to copy the selected Rules, then **Ctrl** + **V** to paste the group of Rules.

This process copies all the parameters from the selected rule as well, and works either within a session or from one session to another. It is therefore possible to copy a whole group of dozens of Rules from one session into a new session, then quickly edit the parameters to create a similar-but-different version of the Session.

TIP *For Trainzscript users, copy/pasting the Rules into notepad shows all the Rules, Kuids and parameters being used.*

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RULE ICONS

An icon shows beside each rule to indicate the method by which it is executed.

An arrow shows that there are children indented under the rule. The arrow is used to expand and collapse the list of child rules.

A number indicates the order in which a child is executed. This means that the child rule '1' will be executed, then the parent will wait for it to complete (which also means waiting for its children to complete too), and will then execute rule '2', and so on.

The '=' icon means all child rules are executed simultaneously. The parent rule may then complete either when all children are completed (or sometimes when one rule completes, depending on the rule).

The 'X' means that rule doesn't execute its children. Any rule indented below that parent will never be run.

The '?' icon means the execution is unknown. This happens when the creator of the rule has not implemented the interface which tells the game how/if it executes children.

The creator of a rule can also add a custom icon.

NOTE *A Rule that requires additional information or configuration will show an* ❌ *within the rule to indicate the Rule is not going to execute in the current state.*

www More information on Session Rules can be found at: http://online.ts2009.com/mediaWiki/index.php/HowTo/Session_Rules.

RULE HIERARCHY LISTS

Lists provide a variety of ways of dealing with Rules that need to be executed in a specific sequence. For all indented rules that execution is controlled by the parent. Top level rules are executed simultaneously when the session starts.

www For more information on Rules Hierarchy visit: http://online.ts2009.com/mediaWiki/index.php/Session_Rules_Overview
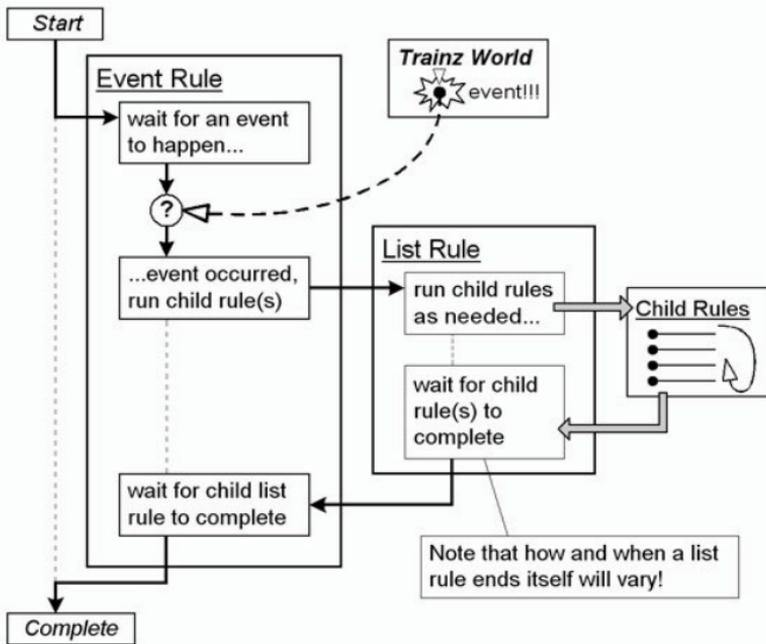
ORDERED LIST

When started, the Ordered List rule starts its child rules in succession. After executing the first child rule it waits for that rule to complete before starting the second child rule. It repeats this behaviour progressively until it has executed all of the child rules one after the other.

As the child rules are executed in a linear fashion there is never more than one child rule running at a time. Progressing through the list of child rules and executing each one in order is referred to as the 'list cycle'. The final child rule must be complete for the list cycle to complete.

Once this list cycle is completed, the Ordered List rule either completes itself or restarts the cycle depending on the settings selected in its configuration dialogue.

http://online.ts2009.com/mediaWiki/index.php/Ordered_List

PROGRESSIVE LIST

When started for the first time, the Progressive List rule runs its first child rule. After the first child rule has completed the Progressive List rule then completes itself. In order to run the successive child rule, the Progressive List rule must be restarted by a parent rule. This behaviour continues progressively until all of the child rules have been executed.

While the sequential execution of child rules is similar to the behaviour of the Ordered List rule; the Progressive List rule only executes one child rule each time it is started.

Once this list cycle is completed, the Progressive List rule either repeats the entire process; repeats only the last child rule; or takes no further action depending on the settings selected in its configuration dialogue.

http://online.ts2009.com/mediaWiki/index.php/Progressive_List

SIMULTANEOUS LIST

When started for the first time, the Simultaneous List rule runs all of its child rules simultaneously (shown by the "equals" icon rather than numbers). How the Simultaneous List rule completes itself depends on the settings entered in its configuration dialogue.

http://online.ts2009.com/mediaWiki/index.php/Simultaneous_List

RANDOM LIST

When started, the Random List rule randomly selects and executes one of its child rules. Once the selected child rule is complete, the Random List completes. If any further executions are required the rule must be restarted by a parent rule.

http://online.ts2009.com/mediaWiki/index.php/Random_List

RULE TEMPLATES

The new "template" system enables rapid development of a series of sessions by configuring a template and then adjusting variables for each session. Please visit the Trainz Wiki for more information on templates.

ADDITIONAL RULES

There are dozens of Rules that can help customize your Session and many different ways to implement them. Please visit the our Trainz Wiki Session Guidelines page for more information.

http://online.ts2009.com/mediaWiki/index.php/Session_Creation_Guidelines

TRAINZSCRIPT

Rules are all built using "TrainzScript", which is a programming language designed just for Trainz. By using these scripts, programmers are able to create powerful Rules that can do almost anything. As an extreme example, a single Rule could bew written to control an entire operating session.

While some programming knowledge is required to create new Rules, the possibilities to create generalised Rules for end-users, or Rules for specific one-off requirements are endless.

Please visit the our Trainz Wiki TrainzScript page for more information.

http://online.ts2009.com/mediaWiki/index.php/Scripting

5. MANAGING CONTENT

With many thousands of items built into Trainz and tens of thousands more available to download, a system is required to manage everything. This chapter explains how Content Manager can help you find, organize and edit all your content.

Content Manager

What is Content?

Content is a broad classification for all the items that are used by the T:ANE software. This includes:

> 3D objects such as locomotives, rolling stock, track, vehicles, people, buildings, bridges and tunnels.

> other items used by the Trainz software such as displacement maps, textures, skyboxes, sounds, scripted rules.

> objects created using Trainz software such as routes and sessions.

Content is created by community members just like you and is available from many places on the Internet. The major source of content is the "Trainz Download Station". This is a huge library of over 250,000 objects that can be accessed using Content Manager.

Every asset used in Trainz requires a unique identifier called a "KUID". e.g. <KUID2:43750:12345:02>

The first part of the KUID identifies the content creator and the second set of digits is the unique identifier for a specific asset from the author.

The third number is the item's version number and allows users to update to the latest version of an asset which will then seamlessly replace the old asset wherever it is used.

INTRODUCTION TO CONTENT MANAGER

Content Manager (often called "CM") can be accessed from the Trainz Launcher. It has been totally rewritten for T:ANE.

CM provides a range of options to manage and control the many thousands of assets available for Trainz. The main functions include:

Sorting, Searching and Filtering Content

Displaying Content Information

Downloading Content and Dependencies

Viewing Content in 3D

Editing Content

Uploading Content

Verifying and Submitting Content

Exporting Content

MENUS

CM is driven through four "menus":

1 The top Menu Bar

2 The Filters Section at the top of the window

3 The Column Headings menu

4 The R-Click menu that provides access to a variety of tools.

MENU BAR

This is the same Menu Bar as accessed from the Launcher. Through the File option, it provides access to the various modules, and through the Developer option, access to technical tools such as the Database Rebuild option

FILTER SECTION

This section provides powerful search and filtering options. A number of pre-saved filter options are provided, and Custom filters can also be created and saved.

COLUMN HEADINGS

Columns can be sorted by clicking on the headings. Additional columns can be added by R-Click on an existing heading and choosing from the available options.

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R-CLICK MENU

This menu provides the core of the CM options where you can view, edit, import, export or create content.

SORTING, SEARCHING AND FILTERING
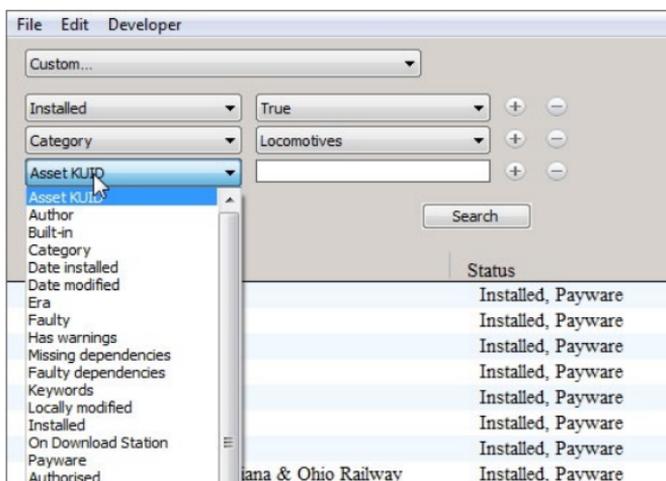
SORTING

Sort the current item list by clicking on one of the column headings. Click again to toggle the direction of sort to either ascending or descending order.

SEARCHING AND FILTERING

Choose from the list of Default Filters to quickly generate a list of content. To see all items on the Download Station, choose the option from the list then click Search. A progress spinner will show until a list of items will appear. The gray color indicates they are not installed. The Custom filter provides a range of search/filter parameters to find the specific content you are looking for quickly.

ADDING A SEARCH PARAMETER

The default Search panel has a search parameter of "Name" with no value entered. Type in "Car" then click Search to return a list of all assets with "Car" in the name. Note that this includes results such as boxcar and cargo. Add another search parameter by clicking on the "+" button to the right of an existing search parameter. Click on the new parameter and choose Category then choose Vehicle from the drop down list of Category options. Click search and now only items with "car" in the name and also Category = Vehicle are shown in the list.

USING LOGIC OPERATORS

The default search is that each parameter and value must be satisfied for items to show in the Main Panel view. In other words parameter 1 "AND" parameter 2 must be satisfied.

To change this default, add another parameter between parameter 1 and parameter 2 and choose the "OR" operator Now the results will show parameter 1 "OR" parameter 2.

REMOVING A SEARCH PARAMETER

To remove a search parameter, simply click on the "-" button to the right of the search parameter.

SAVING SEARCH FILTERS

To save your current filter, select the Save option from the Filter list. Type in the name of the new Save Filter and click Save.

KEYWORDS

You can use keywords to enhance the description of assets and make them easier to find. By default all assets have their name text as keywords. Content Creators can also add keywords to their content when they create assets to assist in finding them amongst the thousands available.

You can also add your own keywords to content by right clicking on one or more selected assets and clicking on Edit Keywords in the context menu. Enter the desired keyword and click on the Add button. You can continue adding keywords in this way to the selected content.
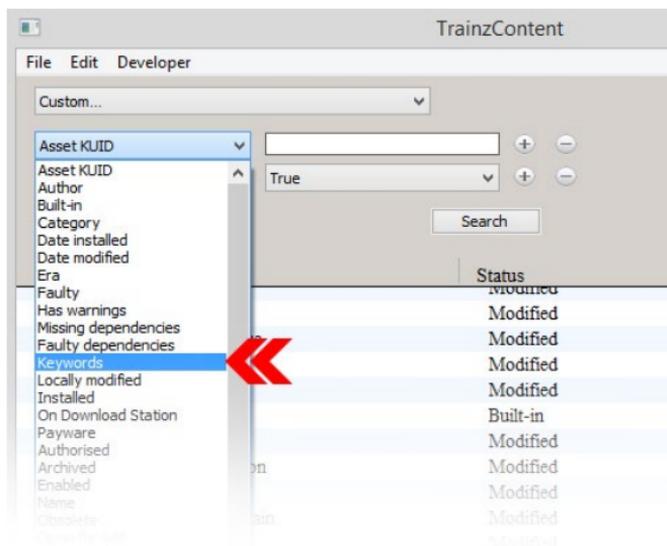
Once the keywords have been added, in the future you can use the Keyword search parameter to find the relevant items quickly and easily.

PICK LIST

Located at the bottom of the Content Search Filter dialogue, the Pick List is used as a "clipboard" for commonly used assets. Drag and drop an asset(s) from the relevant Tool Tab onto the Pick List panel to add it. To remove an item click- + hold it out of the Pick List window.

CATEGORY

The Category of the asset determines how it is handled by CM and T:ANE. Categories are a useful way of finding a specific type of asset such as Track Object or Train Interior.

STATUS

The Status shows the type of asset such as Built-In, Modified, Faulty etc.

RATINGS

A zero to five star rating can be applied to each asset using the 🖱 > context menu. Filter based upon the number of stars for an asset using the Rating filter option.

Use Ratings, Keywords and Picklists to sort your content into various sets for use throughout T:ANE.

DISPLAYING CONTENT INFORMATION

GET INFO

> Get Info to display a new window containing the item name, Asset ID (KUID), Author, Description and Thumbnail image. This window also provides an option to Edit the asset.
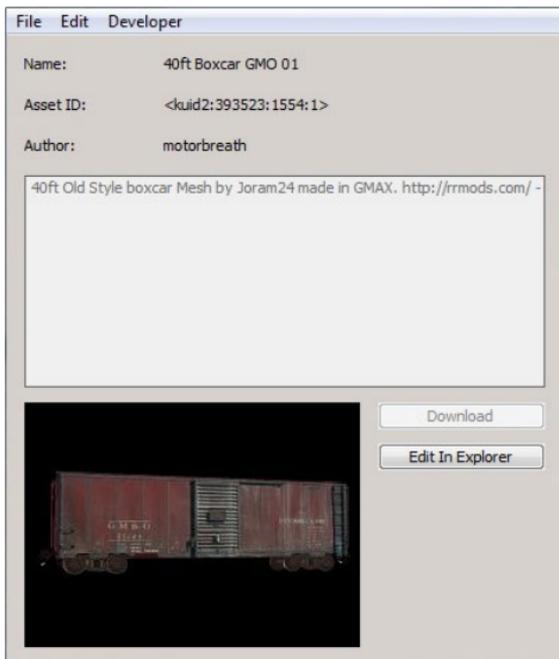
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LIST DEPENDENCIES/DEPENDANTS

> View Dependencies or Dependants to open a new window listing all the assets that an object relies upon (Dependencies), or all the assets that rely upon the selected asset (Dependants).

TRAINZ A NEW ERA
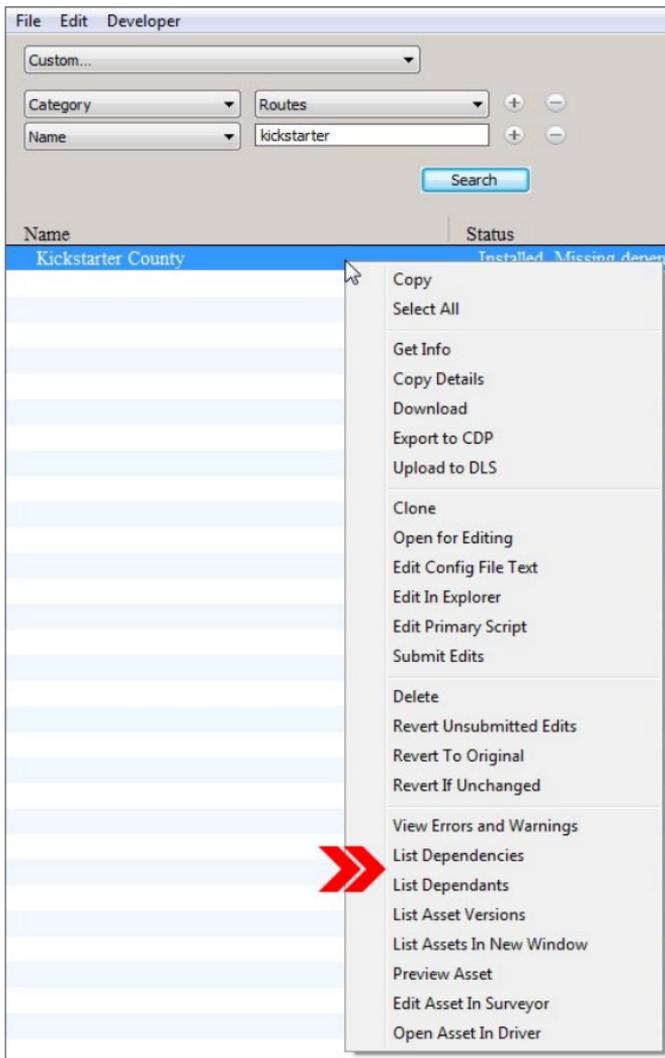
COPY DETAILS

> Copy Details will copy the KUID and Asset Name into the clipboard. e.g. <kuid2:393523:1564:1> 40ft Boxcar UP 01

VIEWING CONTENT IN 3D
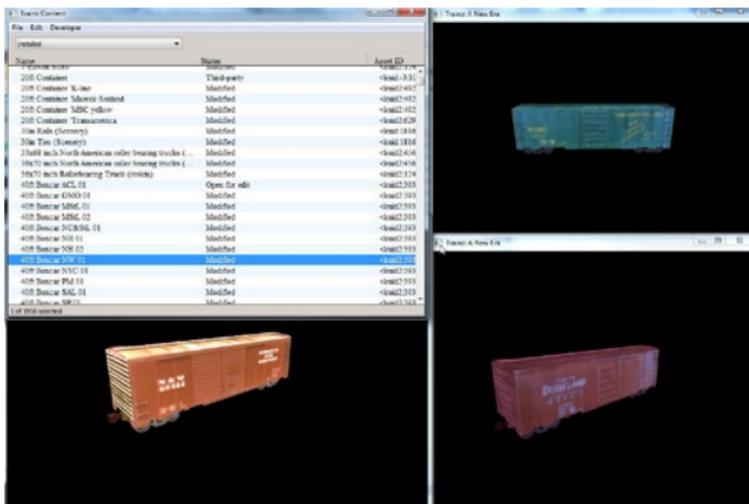
T:ANE supports multiple windows and therefore it is now possible to view content from Content Manager in a game window (while you also have another game window open such as Surveyor).

To view an asset in the 3D world, select an asset and 🖱 > View Asset In Game. This opens a new Trainz window with the 3D object rotating in the window. You can stop the rotation using your mouse and vary the rotation by dragging your mouse.

For Routes or Sessions, 🖱 > Open Asset in Driver or 🖱 > Edit Asset in Surveyor. You can have several windows open at one time depending on the size of the assets you are viewing.

NOTE *Assets must be on your local machine to do this. DLS items must first be downloaded before being viewed.*

EDITING & REVERTING CONTENT

T:ANE stores assets in a database called the Trainz Asset Database (TAD).

New assets must be Created and then Submitted to the database before they can be used in T:ANE.

Similarly, assets that you want to Edit need to be "released" out of TAD (i.e. Opened for Edit), edited and then Submitted back into TAD before the changes can be seen in T:ANE.
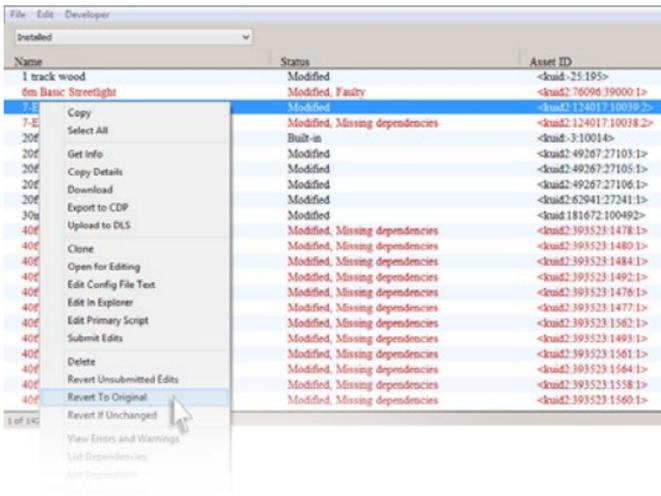
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OPEN FOR EDIT / EDIT IN EXPLORER

Use this option if you want to extract the asset out of the TAD. Select an asset in the Main View and 🖱, then choose Open for Editing from the context menu. The asset is now available for editing.

Behind the scenes your T:ANE\User Data\Editing directory now has a copy of the asset sitting in a folder. If you want to automatically open the folder in Explorer use the option "Edit in Explorer".

Remember, until the item is Submitted, any changes are not yet visible to T:ANE.
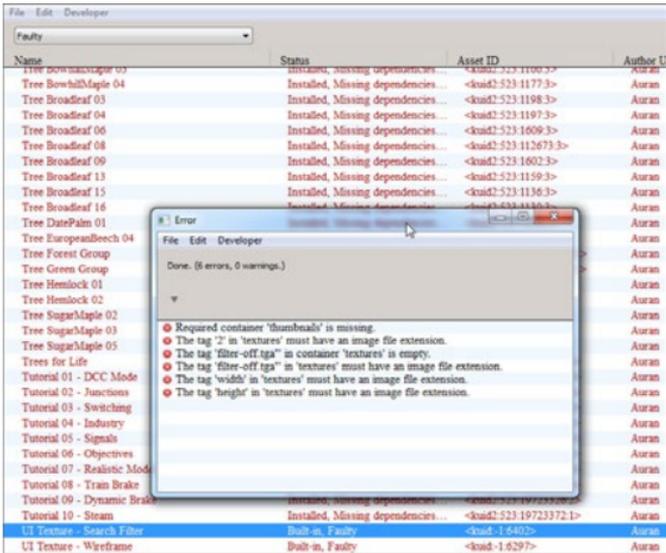
EDIT CONFIG FILE TEXT

This handy option allows you to open just the "config.txt" file, make any changes required, save the file, then Submit to update the database.

EDIT PRIMARY SCRIPT

Select an asset in the Main View and 🖱, then choose Edit -> Edit Script from the context menu. If the asset selected doesn't have a script associated with it you will get an error message and the asset will be left in the Open for Edit mode.

REVERTING CONTENT

When an asset is Open for Edit it can be returned to its previous state in the TAD by using the Revert option.

To Revert an asset select the asset in the Main View and 🖱, Revert from the context menu.

Another Revert option, available only for built-in content, is to Revert to Original. In this case the modified asset is reverted back to its original state as supplied with T:ANE.

DELETING ASSETS

Deleting an asset removes the asset completely from your computer and from your T:ANE content database. Of course this makes it unavailable in Trainz. If it was a Download Station item it will still be listed in CMP, but you will have to re-download it to make it active in the game.

To delete an asset, select it and 🖱 > Delete. Built-in assets cannot be Deleted.

⚠ *Make sure you back up your locally modified (non-DLS) assets. Once they have been deleted there is no way to recover them.*

DOWNLOADING & DEPENDENCIES

The Download Station has many thousands of assets available for you to download free and add to your Trainz software. CM maintains an index of assets on the Download Station which is constantly being updated as new assets are added.

Before you start downloading from the Download Station, you must enter your Planet Auran username and password in the Internet tab of the Settings menu from the Trainz Launcher.

Use the search, sort and filter options of CM to browse through the assets.

DOWNLOADING ASSETS

Select the item you want to download (or Ctrl + 🖱 to multiselect several items) then 🖱 > Download. A new download window opens and shows the progress of the download. You can also click the expand arrow to see more details of the progress.

Multiple downloads can be run simultaneously and to cancel a download in progress, just close the download progress window.
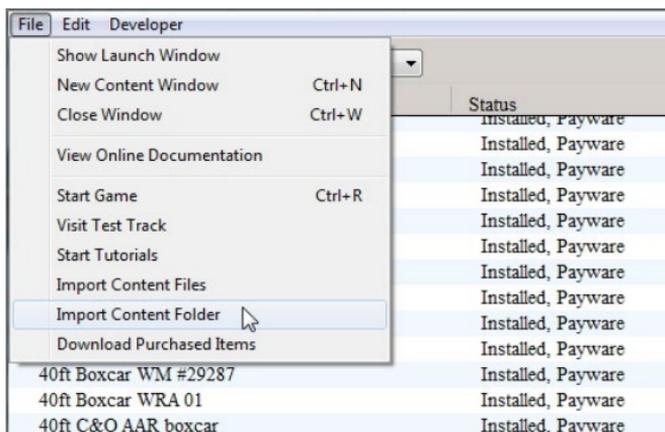
ASSET DEPENDENCIES

Some assets require other assets to operate correctly. These are called dependencies. For example a locomotive needs bogies, engine sounds, engine specifications and possibly other scripted assets. CM takes care of finding the dependencies automatically.

MISSING DEPENDENCIES

Sometimes assets show with a Status of "Missing Dependcies". This can happen when people have removed assets from the DLS that are relied upon by other assets, or made those items obsolete. Clicking on the Show Dependencies option generates an "Unknown Asset" message since the DLS no longer knows about this asset.

VIEW DEPENDENCIES

For a local asset, select it and click 🖱. Choose View Dependencies from the context menu. This opens a new window showing the full list of dependencies for that asset.

IMPORTING CONTENT AND CDPS

You can import content either in folder form, or as a CDP.

Click File > Import Content to specify a folder containing the content to import. The folder can contain one or more Trainz assets in Folder or CDP format.

Click Select Folder to import all the content in the selected folder and sub-folders. A progress window lists the items that are being imported and installed.

You can also drag and drop a folder containing one or more assets onto the main screen of CM.

EXPORTING CONTENT

Select the content you wish to export, and choose Export to CDP. This will create a redistributable content set that you can share with other users.

UPLOADING CONTENT

The uploading process has been streamlined and is integrated with the Download Station and Planet Auran.

Select one or more assets in the Main View that you want to upload, then R-click and choose Upload to DLS from the context menu. The selected asset(s) will appear in the new Uploads progress window.

Also if any of the assets are broken or are not your assets then these assets will be flagged in the dialogue box with appropriate error messages. A Planet Auran license agreement will also appear and once you have read the license, click on the Accept button.

In CM a dialogue box opens showing the success or failure of the upload. If successful, at the same time, CM logs you onto Planet Auran and the secure website opens up in a browser window at the "Your Content" page.

Click on the "Unprocessed" button to confirm your asset has been received. It will have a generic name "upload.cdp" and will also have a time/date stamp so you can identify it. You can still stop the upload process at this point, by clicking on the "Do not process" link.

Once Approved, an email confirmation sent. The asset is usually available on the Download Station within six hours from time of approval.

ARCHIVING AND BACKUPS

For T:ANE, you should organize your own archive or backup process using traditional methods such as external drives etc.

CREATING CONTENT

Creating your own assets for T:ANE is supported through the Trainz Wiki which provides detailed information on the current requirements for various asset types.

To create a new asset, you will generally begin by cloning an existing asset and making changes to the config file, textures and meshes where appropriate.
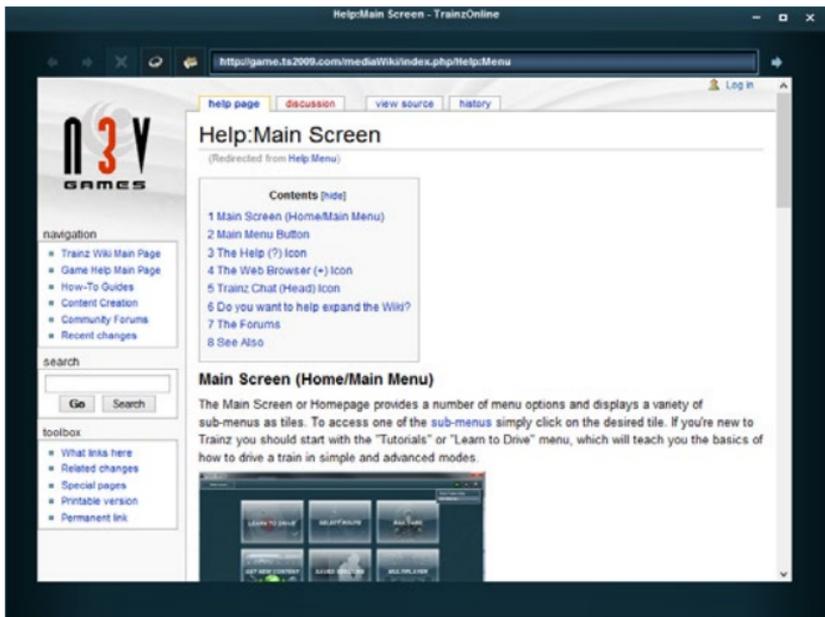
DEVELOPER TOOLS

Click Launcher > Developer to access additional content related tools primarily aimed at content creators and internal developers.

REBUILD DATABASE

This should be used if you have unexpected problems with missing content or content errors. This process updates your database, revalidates the content and can often clear up any corruption that has occurred.

SHOW LOGS

This option will show a log of any activity including errors and warnings occurring when loading or operating a session.

SHOW PROFILER

This primarily a developer tool but will show your current rendering performance in frames per second.
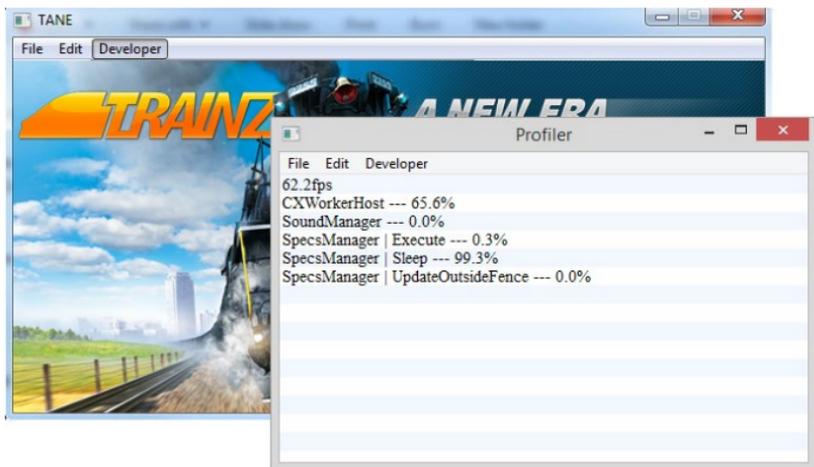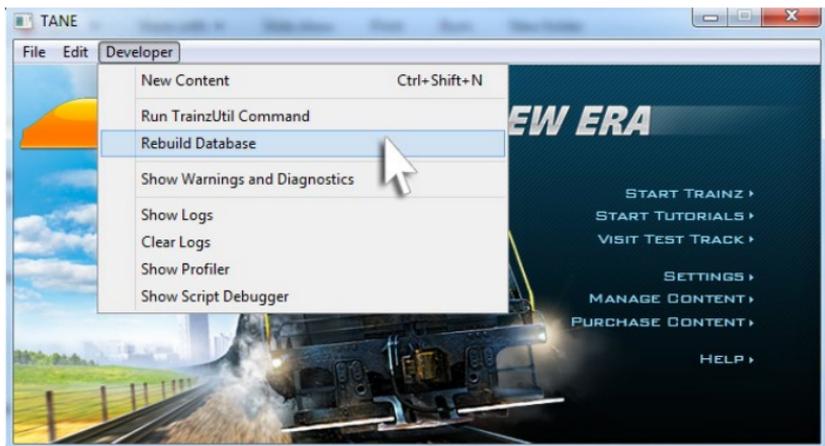
6. TEST TRACK

A train simulation is all about physics. Test Track provides a set of graphical tools to monitor and analyze every aspect of train physics being simulated in T:ANE.

INTRODUCTION

The Test Track module is an innovation created to enhance the physics capabilities across all aspects of Trainz that are affected by the physics simulation.

The tools have been designed so users can view what is happening "behind the scenes" to the forces at work that make trains move along the tracks.

While many end users will not directly use this module, they will experience improvements over time as the "power and braking curves" for each loco are customised and as other elements such as the effect of track curvature are analyzed and modified in code.

MAIN SCREEN

The look of the main screen will be familiar to Trainz users; it is very much like a typical Driver Session, but with some important differences. The screen is set out as follows:

1 The Main Menu provides different options for creating, editing, saving tests and editing enginespecs.

2 The Driver HUD is customised specifically for physics testing.

3 The Graph Panel displays data points for the set of variables selected by the user and includes export options.

4 The Driver Command Bar provides a new set of Drive commands to issue Cab Mode instructions to AI drivers.

5 The Train Tab provides an interface to create consists and place traincars on the track.

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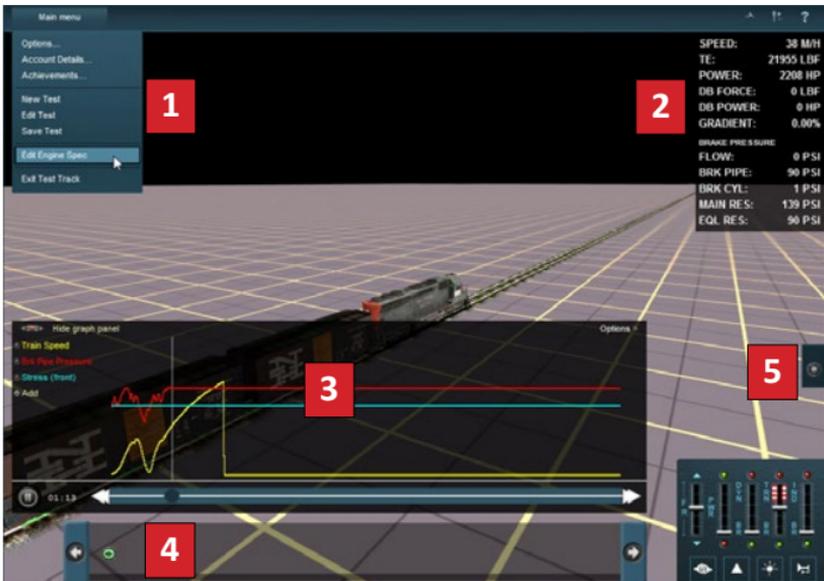
SETTING UP A TEST TRACK

Test Track uses a basic set of track laying options to set up the required track sections for your testing. Track is laid in discrete sections:

Length- set each section to a specific length in meters.

Curve (m)- enter 1000 to create a gentle curve to the right based upon the circumference of a circle with a 1000m radius. Use-1000 to curve to the left.

Gradient (%)- enter 1% to create a track that will rise 1m every 100m (also known as 1 in 100). Enter-0.1% and the track will fall by 1m every 1,000m.
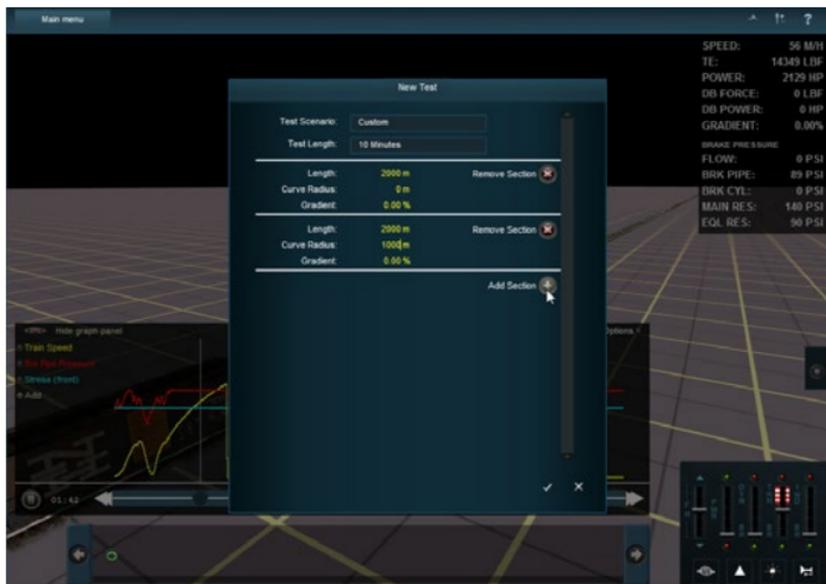
Once you have set your parameters for the first track section, click Add Section to add your next track section.

A trackmark is placed at the end of each new section, so you may want to add several shorter sections to provide additional marker points along your route.

Any time you want to check your track or begin your Test, click the Save tick and your track is loaded along with the previously used train.

Use the Free Roaming camera to navigate along the track or begin your Test.

ADDING A TRAIN

Click the Train Tab to access your installed rolling stock. This tool is used just like it is in Surveyor. Select locos, wagons or cars one at a time and place them on the track, or select a consist and place that on the track. Generally you will want only one train on the track at a time (and run a second test with different stock if you wish to compare performance).
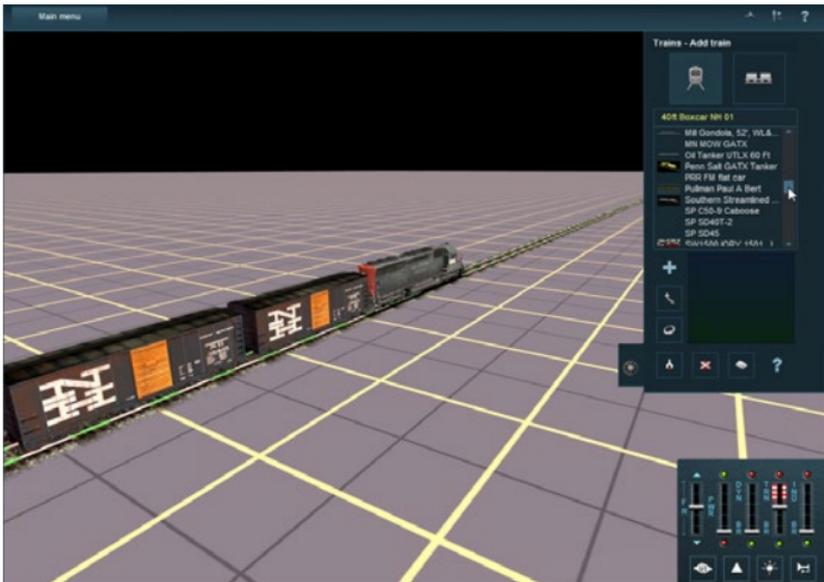
GRAPHING AND EXPORTING

The Graph Panel can be opened and closed using the Show Graph Panel icon.

ADDING DATA POINTS

Add a new value by clicking +Add and selecting a variable from the drop down list. Most variables are available per car. When the simulation is started, the data is then drawn as a line against time on the graph.

DATA POINT LABELS

Mouse over any of the data lines on the graph will show a tooltip indicating the data value and measurement scale.

Click on a data line to anchor the tooltip to the graph. Left-click and drag along the line to move the anchor-point, or drag off the line and release 🖱 to delete it.

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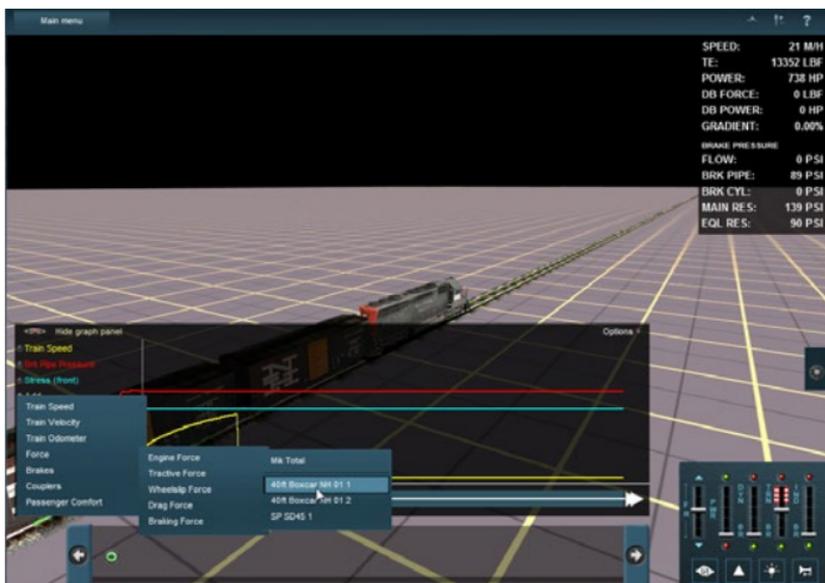
TIME CONTROLS

One of the key benefits of Test Track is that the simulation runs at faster than real-world timing with the results being stored in a "buffer". The buffer can then be played back from any position so you can run a 30 minute test and jump straight to the 29 minute mark almost as soon as you start the test!

Click and drag the time slider or use the Forward and Back arrows to move in increments. The timer shows the time passed since the start of the test.

Note: as you move the time slider, the values also change in the HUD on the top right of the screen and the train controls change remembering the time of any previous adjustments made.

GRAPH OPTIONS

There are several options available. The most important of these is the "Save and Export Test Results" option.

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Click the "Save test results" generates a series of CSV report files which can be saved into a folder for detailed analysis of the data. Each report lists data collected at one second data intervals.

The default Train is the currently selected traincar. Click on the text to bring up a dropdown list of other report options. The "All" option consolidates reports for every car and consist into a single folder.

Open the reports in a program like Excel, then use copy/paste to create summary reports such as comparing the data from one test to another or one car in a test to another.

EDITING ENGINE FILES
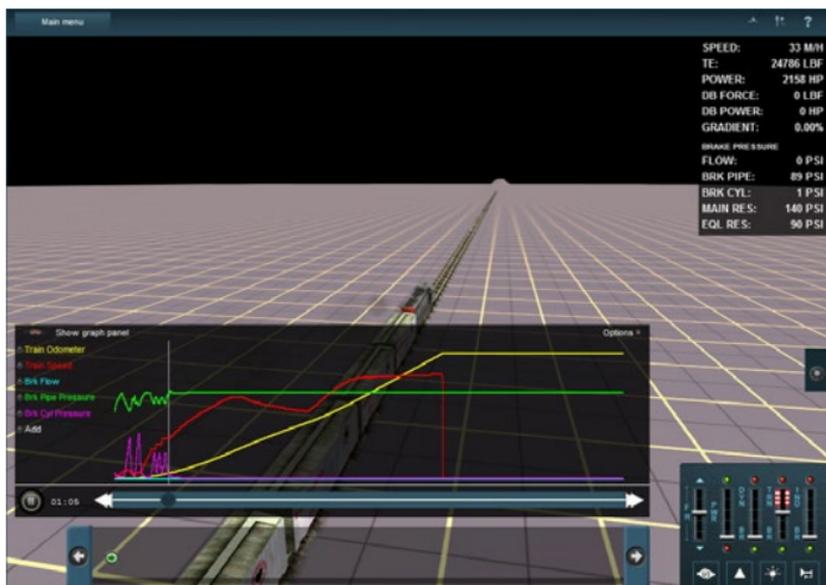
In order to make changes to the performance of your locos and rolling stock, you need to make changes to the underlying parameters that "drive" the physics simulation.

Each traincar requires an engine file asset called an "enginespec". This file includes a long list of values that are utilized by the physics code to determine the behaviour of the train car. By tweaking the values, running tests and analysing the graph and report results, extremely accurate results can be obtained.

This guide will not attempt to teach you how to tune these parameters, but will focus instead on the actual functional aspects of the tools.

CURRENTLY SELECTED TRAINCAR

All the specification data relates to the currently selected traincar. So be careful if you have changed your car selection in the 3D world that you are editing the correct vehicle.

EDITING TRAINCAR CHARACTERISTICS

The editable parameters are grouped by function. To alter any data point, select the yellow numerical text and type in the new value.

Editing the Throttle and Dynamic Brake values can be accessed by clicking on the Edit Values link on the graph. This opens a new set of editable parameters.

BASIC VS ADVANCED EDITING

In Advanced mode, users can edit each value directly. The Basic mode allows users to enter known data from real-world sources and T:ANE will create a "best estimate" set of values.

SAVING CHANGES

There are three options provided for saving. To begin with, save changes in memory and the current test is automatically restarted (and the simulation operates with the new data).

Once you are happy with the test results, you can choose to Overwrite the current asset or create a Clone asset.

NOTE *Users can apply a new engine file via the Train Tab > Properties tool in Surveyor.*

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CREATING AND EDITING TEST TRACKS

LOAD EXISTING TEST

Under New Test, click on the Custom Test Scenario to bring up a drop down list of previously saved Tests. Select the test to load the section data and then make any edits or Save and Load immediately.

EDIT TEST

To make further changes to your currently loaded Test route, choose the Edit Test option.

SAVE TEST

Use Save Test to save your currently loaded test for use again later. Save will create a new asset which you can locate and edit in Content Manager or share with your friends.

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TIP *Use notepad to copy/paste or find/replace to edit larger test tracks then commit the new asset in Content Manager.*

7. BEYOND TRAINZ SOFTWARE

TRAINZ ONLINE

Trainz is far more than the piece of software installed on your computer. There is a world-wide community of train fans involved in a variety of aspects of the Trainz hobby. Below are some of the online places to visit and discover more about Trainz.

GETTING HELP

This manual has been written prior to release of the final product and Trainz is always being updated. To keep up to date on new systems, and to discover more about existing systems, visit the following online resources.

USING IN-GAME HELP

The ? icon on the Menu Bar is your friend. Use this tool to click on a tool or menu and you will be taken to the appropriate Trainz Wiki page.

TRAINZ WIKI

Detailed help on almost every aspect of Trainz. User contributions are welcome so help update the wiki and help other trainz users.

http://online.ts2009.com/mediaWiki/index.php/HowToGuides

TRAINZ FORUMS

Become part of one of the largest online groups of train fans in the world. Enjoy discussions about trains or Trainz; learn more about any aspect of driving, operating, world building or content creation; discover who is creating which routes, locos or other interesting items of content; view screenshots of your favorite parts of the world; os simply help others with your own knowldege of trains or Trainz.

http://forums.auran.com/trainz/index.php

TRAINZ GALLERY

Online gallery for all your screenshots

TRAINZ BLOG

The home for your personal weblog to let others in the community know what you are doing in the world of Trainz.

http://forums.auran.com/trainz/blog.php

TRAINZPORTAL

The portal website that covers everything Trainz related on PC, Mac and mobile.

http://www.trainzportal.com/

SIMULATORCENTRAL

Home of our product store for Trainz and other simulator related products.

http://www.simulatorcentral.com/

TRAINZ ON YOUTUBE

Check out the latest official and unofficial videos on Youtube.

http://www.youtube.com/n3vgames

TRAINZ ON FACEBOOK

Join thousands of other Trainz fans on our Facebook page.

https://www.facebook.com/TrainzSimulator

8. CREDITS

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" *Thanks also to the hundreds of Content Creators who have provided scenery, rolling stock and other content directly for inclusion or via the Download Station.*

TRAINZ CONTENT CREATORS

We would like to offer a very special thank you to our content creators, without whom we would not have a product to release. We look forward to working with all of you again in the future.

Healesville, Australia	VicTrainz- Zec 'S301' Murphy Aaron 'Azervich' Collins Garry 'Jerker' Jenkinson Bill 'Billegulla' Fock
C&O Hinton Division, USA	Peter Cooper (gawpo50) Fallen Flag Railroads
East Coast Main Line, London Kings Cross to Edinburgh, Great Britain	Napierdeltic and team
Queensland Railways Southern Line, Warwick to Wallangarra, Australia	Kent Wagner
Milwaukee Road Avery- Drexel, USA	TUME
Season Town Northern RR, USA	TUME
BiDye Traction Railroad, Model Layout	Phil Skene
Kickstarter Reward Rolling Stock	Jointed Rail team
Biatorbagy to Tatabanya, Hungary	Bob Cooper

KICKSTARTER SUPPORTERS

T:ANE was given a huge boost in late 2013 with the successful Kickstarter campaign where 1791 people pledged their support to help make T:ANE a reality.

In addition, with a further 489 pledges through our own website, we reached a total of 2280 people who put their faith in N3V Games to help make Trainz better than ever before.

Starting off we have our top supporters along with the items they have sponsored, followed by our TPC and TEG members, followed by an alphabetical list of the remaining supporters who provided their name for the credits.

We thank each and every one of you for helping make T:ANE possible.

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Michael Ford

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RSA Trainz

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Kenneth Soerensen (TheTiger)- KS81 Trainset

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cfl1604- YVRR depot in Merced, CA

D.B. Gard- Lumber Mill

Denis (dkarpenko)- Coal Mine

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Akke & Rafaël Monasso

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Alan Wright (madclarinet)

Albert Clotet

Albert88

Alberto Rainero

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Alco_P-A

Aldo Galimberti (sidew)

Alec Brenckle

Alejandro Cifuentes (ale)

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Aleksey Meshcheryakov (alekseymesch)

Aleksey Zverev (Erendir)

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Alex Demchenko

Alex Goncharenko

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Alex Lincicum (anl)

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Anthony Short

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Anton Telegin

Antony Shannon (icbear)

AntonyVW

AntTaranish

Arix

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Arturo (Civil Engineer)

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Atle Pettersen (adoggy)

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B.F.Breuer

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B.M. Boughton

B.M.Barton

B.McIndless (one4u2eh)

B.P.Kristensen (bpk_2007)

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BahnFan2014

BaiCaiX

Barnett Hsu

Barry Leitch

Barry Miller

Bart Damons (bdamons)

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BDZ44144

BeeKay

behemoth14

Ben Margherone (buddhaben)

Ben Martin (trainut)

Ben Metzger (UP4021)

bendorsey

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Bernd Sakowski

Bernie O'Connor

Bernie Wiemers (bwiemers)

Bernie17345

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Bigtoot

Bill Cangley

Bill Chappel

Bill Cleveland

Bill Rehbock

Bill69

Billrr

Bjorn L

-Blackhawk-

Blayne Mayfield

Bloodnok

BlueBoyRider

BlueSamurai195

boat

Bob Denning (DennR)

Bob D-M

Bob Granfield (boffin)

Bob Hahn

Bob Hatfield (southpaw_la)

Bob Hume (fatboab)

Bob Latimer (latimers)

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Bob Traylen

Bob York

bobsanders

BoHill

bombi

Boris Bosnjak

bourne3

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Brandon Hobbs

Brandon van Ommen (Admigo)

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Brett A Thompson

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Brian_Trainman

Briankeg

Bruce Freeland

Brummel

Bruno Liddle

Bruno Meyer

Bryan Heron

Bryan Lane

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Bucko7RAR

BuilderBob

bundlestars.com

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C.R. Mann

Cale Leiphart

Cam Bowes

Carey Born (cbing)

Carl Keller (gp9)

Carl Lewis (Lewiscc65)

Carl Veenstra

Carlo Cesareni (cescar)

Carlo Lagomarsino (Pendolino)

Carlos "AlexDnasty" Alvarez

Caronen

carr

caspar1946

CasperJack

cchurcher

Celticwarrior

CFM

CGD

cgwright

Chad Douglass

Charles Fetterhoff (Charles34)

Charlie Prentiss

Chase Zickefoose

chaztrains62

Chirag Shah (shahichirag)

CHN SS3

Chris Atkins

Chris Borgogno

Chris Boyce

Chris Hucklebridge (psycho_aussie)

Chris Hughes

Chris Ireland

Chris Jakan

Chris Mospaw

Chris Noble (Chaworthnoble)

Chris Simmons

Chris Thompson (wildfire142)

Chris Wheeler

Christian Gaede

Christian Leiss

Christian Otto (The_Gentleman)

Christian Schmitt (Borovice)

Christian Vandecasteele

Christopher Biessener

Christopher Janzen (cj187)

Christopher Noble Heitz

Christopher Sullivan

Christopher Taylor

Chrisville153

chur_maori

ChWerwick

Cisso

cjennin

Clancmic

Clarinus

Class of 55

Claude Broche (claudebroche)

Claude Terrier

Clayton Cornell

Cloud Driver

Club 7000

Cody Wilson (2Wayne)

Col Shaw

coldev

Colin Chappell (Driver_Col)

Colin Price

Colin Wheeler

colin55

Colourlight

Connecticut Train Fan

Connel Cowan

Connor Atkinson

Connor MacBean

cooltrain

Corey Sessions

CRH380B-6216L

cspz

CurlSnout

cveto3ca

Cyrel Nilsson

Cythina

D R Brundler

D. Ciolino (fireeng20001)

D. Lawrence

D. Lecole

D. Mechetin (QualcommingFa)

D.Frost (Flyingfox)

D.J.Knol

D.Jones (Bidston Wanderer)

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D.M. Brown

D.M.Leland

D.P.McElroy

D.Shinbine

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DadyCar (dr68)

Dale Dixon

'DaMatz'

Damien Knuckey (N4K1)

Dan (dericm) Meinhard

Dan Coghlan

Dan Davis

Dan S (AlphaMaster)

DanH

Daniel Bethke (Highspeedrail)

Daniel Boulton

Daniel Henninger (jadestorm)

Daniel L P Brown

Daniel Mueller

Daniel Parrish

Daniel Strutz (poltergeist007)

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daniel7732

Danmrc

Danny (Golden Pig) Beck

Danny Wilson

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Daryl Cronkwright

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Dave Hobbs

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Dave Noble (Traindent65)

Dave Smith (chuffchuff)

Dave Snow (davesnow)

Dave Tillman (zack0bear)

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Dave W

David Dann

David (Chuzpah) Goodin

David 'Davie_UCF' Bowery

David Edwards

David Frederickson

David Gibbons (dpgibbons)

David Gregory

David Hamann (marinus)

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David Johnson (UK)

David K Akridge

David Mathis (sgt_mathis)

David Melling (trainfan2017)

David Owen

David Taylor

davidashbyash

DavidBird

DavidBrown

DavidPCZ

dbvoss

dcwhite465

Dean Lodzinski

Dean Moore (dmoore)

Deane Tunaley (Dinorius_Redundicus)

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DeeBee

Demm

Denis Arnaud

Denkbr

Deon "Traindriver" Collins

DerMetz9er

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Df3542

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doctorg

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Dome97

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Don Hendler

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Donald Millican (DonaldWM)

Donproto

DonZer63

Doug Broadie

Doug Simmers(bassnclass)

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Dr Kanukie

Dr. Dennis Hill

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EmpCris

Eric Gontier (Ericia)

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Eric M. Thorn

Eric M.C.

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Frank Galka

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G Menso

G Musson

G Wilson

G. L. Miller (Sukerfish)

G.Collins(PharmboyNorth)

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G.Penelov (jorojo)

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Kling Richard S.

KmHorizon

kmj

Kreerk

KTK

Kucher Dmitriy (de_lorian)

Kvick

kws4000

Kyle Shannon

L Higley

L.J. Stott

Laika

Larry Pienkowski (pienky)

Larrymoecurly

Lars H.

Lars Rasmussen

Laurentiu Tilea (iras_w)

laz

ldcha

Leigh Fisher (pinkmundi)

Leo Groot

Lewis Clarke

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M. Sidelmann (msi911)

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M.C.Hunter (Venford)

M.F.O. Ballin

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M.Kirkham (Capt109)

M.Lopes

Maas

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Manka Marcell

Manuel Martínez (manweb)

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Marc Derycke (Telemendas)

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Mark (Zaragon)

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Mick Berg

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Mihay

Mike (firemyk) Siefker

Mike Brassington{MikeBr)

Mike Ferrell (Leeferr)

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P. Tyler Bundy

P. van der Kwaak

P.J.Edeson

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P.R. BURKE (pburke1976)

P.Shannon

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patchy

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patgerard

Patland

Patrickv

patrik åhlen

Paul A Green (greenpa)

Paul Campanini PBY357

Paul D Mace (barn700)

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Yuuu :D

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Zaki S. R. Husain

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zszz

Zulnex

zyaba11

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9. Keyboard controls

KEY:

0	Number Pad keys are colored light blue
CAPITAL letters	represent the letter to press (do not press the Shift Key.)
'or'	means there is more than one option. Choose either option
⇧ Shift + X	means hold the Shift Key down and press the X Key

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DRIVER MODE

CAB MODE

Key	Action
9 or **Q**	Release Brake
6 or **Z**	Lap Brake
3 or **A**	Apply Brake
Pause Break	Emergency Brake
4 or **E**	Toggle Independent Brake
0 or **D**	Brake Bail
8 or **W**	Throttle Up
2 or **X**	Throttle Down
5 or **S**	Throttle Zero
* or **F**	Reverse Handle Forward
/ or **R**	Reverse Handle Backward
7 or **C**	Toggle Dynamic Brake
Alt + **9**	Emergency Stop
Alt + **7**	Driver's Reminder App On
Alt + **8**	Driver's Reminder App Off
Space or **Ins**	Reset Automatic Warning System
Alt + **1**	Isolate Automatic Warning System
Alt + **2**	Activate Automatic Warning System
Alt + **3**	Reset Train Protection Warning System
Alt + **4**	Isolate Train Protection Warning System
Alt + **5**	Activate Train Protection Warning System
Alt + **6**	Override Train Protection Warning System

Key	Action
Alt + **;**	Toggle Cabin Hardware 0
Alt + **'**	Toggle Cabin Hardware 1
T	Reset Trip Meter
Alt + **[**	Engine On
Alt + **]**	Engine Off
Alt + **0**	Master Switch On
Alt + **-**	Master Switch Off
Alt + ****	Panel Lamp Test
Alt + **~**	Vigilance Foot Pedal
Alt + **,**	Wipers On
Alt + **.**	Wipers Off
Shift + **F**	Cabin Fans

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DCC MODE

`,` + `X` Decelerate/Reverse

`.` + `W` Accelerate/Forward

`/` + `S` Stop

`'` + `A` Apply Handbrake

HUD CONTROL

`F5` Toggle Interface

`F6` Toggle Driver Bar

`F7` Toggle Button Bar

`F8` Toggle Custom HUD

`F9` Toggle Controls

`Ctrl` + `H` Toggle Help Tips

`Ctrl` + `N` Toggle Vehicle Name Visibility

CAB STEAM MODE

`W` or `.` or `8` Steam Regulator Up

`S` or `/` or `2` Steam Regulator Down

`F` or `*` Steam Reverser Up

`R` or `/` Steam Reverser Down

`I` Steam Injector Up

`O` Steam Injector Down

`Alt` + `I` Steam Injector Up 2

`Alt` + `O` Steam Injector Down 2

`N` Steam Blower Up

`Shift` + `N` Steam Blower Down

`1` Toggle Firebox

`Space` Shovel Coal

`Shift` + `Space` Coalman Wave

CAMERA CONTROLS

⬆	Camera Upward	`Page Up`	Zoom In
⬇	Camera Downward	`Page Down`	Zoom Out
⬅	Camera Rotate Left	+	Next Train Car
➡	Camera Rotate Right	−	Previous Train Car

CAMERA MODE

| 1 | Internal Camera | 3 | Tracking Camera |
| 2 | External Camera | 4 | Roaming Camera |

IN-CAB CAMERA

| [| Camera Previous View | Alt + [| Camera Snap to Previous View |
|] | Camera Next View | Alt +] | Camera Snap to Next View |

GENERAL CONTROL

L	Headlight	Ctrl + W	Toggle Wireframe
Shift + L	Toggle High beam	Alt + W	Toggle True Wireframe
1	Pantograph	Alt + H	Toggle IR Headtracker
H	Horn	Ctrl + 1	Driver 1
− or V	Sand	Ctrl + 2	Driver 2
B	Bell	Ctrl + 3	Driver 3
M	Map	Ctrl + 4	Driver 4
P	Pause	Ctrl + 5	Driver 5
Ctrl + F	Find Object	Ctrl + 6	Driver 6
Ctrl + D	Toggle Decouple	Ctrl + 7	Driver 7
;	Toggle Flashing Ditchlights	Ctrl + +	Previous Driver
Alt + C	Reverse Train Heading	Ctrl + −	Next Driver
J	Toggle Next Junction	Enter	Multiplayer Chat
Ctrl + J	Toggle Last Junction	Ctrl + I	Load
Alt + Home	Show Reason for Autopilot	Ctrl + S	Save
G	Toggle Metric/Imperial	Esc	Close
K	Show Objectives	F1	Help

SURVEYOR

TOPLOGY MODE

F2	Topology Mode	W	Add Water
U	Height Up	Q	Delete Water
D	Height Down	E	Adjust Water Height
A	Adjust Height	X	Extend Selection
−	Decrease Cursor Radius	Ctrl + G	Get Displacement
+	Increase Cursor Radius	Shift + [	Rotate Displacement Counter Clockwise
[	Decrease Height Sensitivity	Shift +]	Rotate Displacement Clockwise
]	Increase Height Sensitivity	Ctrl + [	Decrease Displacement Scale
G	Get Height	Ctrl +]	Increase Displacement Scale
H	Use Height	B	Selection Box
P	Plateau	F	Apply Displacement

GENERAL CONTROLS

Ctrl + N	New Map	Alt + O	Contextual Info
Ctrl + S	Save Map	Shift + R	Select Route Layer
Ctrl + E	Edit Map	Shift + S	Select Session Layer
Ctrl + F	Find Object	Ctrl + Shift + F	Search Panel
Ctrl + M	Mini Map	F9 or Ctrl + W	Wireframe Mode
Ctrl + R	Rules	M	Move Object
Ctrl + C	Copy	R	Rotate Object
Ctrl + V	Paste	G	Get Object
Ctrl + Z	Undo	D	Delete Object
Ctrl + Y	Redo	H	Adjust Object Height
Ctrl + F2	Quick Drive	Q	Split Spline
Alt + Y	Walk Cam	X	Remove Spline Point
Alt + U	Fly Cam	I	Insert Spline Point
Ctrl + Space	Toggle GUI	S	Smooth Spline
		F12	Help

TOOLS MODE

F5 Tools Mode	**]** Rotation Clockwise
A Place Camera	**[** Rotation Counter Clockwise
M Move Camera	**R** Place Ruler
D Delete Camera	**T** Move Ruler
B Select Area	**Y** Delete Ruler
P Paste Area	**S** Absolute Height
	L Relative Height

TRAINS MODE

F7 Trains Mode	**X** Decouple Train
T Train Filter	**C** Consist Mode
G Get Train	**−** Previous Selection
D Delete Train	**+** Next Selection
P Train Properties	**A** Add Train
H Change Train Heading	**M** Move Train
	R Rotate Train

OBJECTS MODE

F3 Objects Mode	**R** Rotate Object
O Object Filter	**G** Get Object
S Spline Filter	**D** Delete Object
− Previous Object	**P** Object Properties
+ Next Object	**H** Height Adjust
A Add Object	**X** Remove Spline
M Move Object	**I** Insert Spline
	S Smoother Spline

TRACK MODE

F4	Track Mode	D	Delete Track
P	Properties	B	Straight Track
T	Spline Mode	J	Toggle Junction
Y	Object Mode	Q	Split Spline
V	Trackmark Mode	H	Spline Height
−	Previous Selection	X	Remove Spline Point
+	Next Selection	I	Insert Spline Point
A	Add Track	S	Smooth Spline
M	Move Track	Ctrl + G	Get Spline Gradient
R	Rotate Object	K	Apply Spline Gradient
G	Get Track	L	Get Curve Radius

LAYERS MODE

F6	Layers Mode	A	Add Layer
Shift + R	Select Route Layer	D	Delete Layer
Shift + S	Select Session Layer	M	Merge Layer
A	Add Layer	V	Toggle Layer Visibility
		L	Lock/Unlock Layer

PAINT MODE

F2	Paint Mode	G	Get Texture
[	Rotate Counter Clockwise	L	Fill Selected Grid
]	Rotate Clockwise	B	Selection Box
Ctrl + [	Decrease Scale	F	Selection Fill
Ctrl +]	Increase Scale	D	Cancel Selection
−	Decrease Cursor Radius		
+	Increase Cursor Radius		

Notes

n3VGames

www.n3vgames.com

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