



What's NEW in TransModeler® 3.0

Incomparable Breadth, Accuracy, and Geographic Detail

TransModeler is peerless in its simultaneous support for the broadest range of facility types and for its attention to detail. With TransModeler 3.0, you can simulate freeways, urban streets, and rural highways. You can simulate clover leaf interchanges, single point urban interchanges, diamond interchanges, and diverging diamond interchanges. You can simulate high occupancy vehicle (HOV) lanes, managed lanes, bus lanes, and truck prohibitions. You can simulate signalized intersections – pre-timed and actuated, isolated and coordinated. You can simulate stop-controlled intersections and roundabouts. You can simulate ramp meter signals, toll plazas, and dynamic message signs. You can simulate auto traffic and truck traffic, bus and light rail routes, passenger arrivals at bus stops and pedestrian crossings at mid-block locations and intersections. For all of its depth and flexibility, TransModeler sacrifices no amount of geographic detail or accuracy for convenience. You can leverage the software's simple-to-use road editing tools to shape roads, medians, intersections, interchanges, and roundabouts to represent scale, geometry, and geographic location more accurately than with any other traffic simulation software.

The versatility of TransModeler does not end there. There are as many focused, behavior-oriented models of driver decision-making and response as there are facility types in TransModeler 3.0. Drivers choose entry lanes on approaching a roundabout based on the exit they plan to take, they maneuver toward electronic or cash booths at toll plazas, they avoid buses stopping at bus stops, they anticipate gaps in adjacent freeway lanes on approaching from an entrance ramp, and they recognize conflict points and safe gaps inside intersections.

Road Editing Made Even Simpler

TransModeler first changed the cost of developing traffic simulation projects by using a geographic information system (GIS) explicitly for traffic simulation as opposed to providing only ancillary support for nonnative geographic file formats. The TransModeler GIS and relational database framework eliminated waste associated with data development, import, and translation. In addition, TransModeler introduced a road editor that was simple to use and that at the same time allowed for ground truth geometry that translated effortlessly to accurate treatment of capacity and points of conflict. In TransModeler 3.0, the road editor's design has been completely overhauled and its tool set significantly expanded. Create roundabouts in one click, complete with splitter islands of user-specified geometric parameters. Reverse the direction of traffic, convert streets between one-way and two-way, divide two-way streets, create dual left turn bays, and add streets that automatically intersect with the streets they cross – all in one toolbox and with only a few clicks of the mouse.



More Facilities than Any Other Traffic Simulator

TransModeler continues to extend traffic simulation to facility types where legacy simulation platforms have yet to set foot. For the first time in any traffic simulation model, you can simulate traffic on streets with center two-way left turn lanes (TWLTL) directly and explicitly without the use of custom plug-ins, geometric approximations, or other compromise solutions that sacrifice accuracy and realism. Caliper also adopted and extended a driver behavior algorithm for passing in the opposite direction on two-lane rural highways in TransModeler 3.0, thus introducing the first ever two-lane passing model in a commercial microscopic traffic simulator. Further still, lanes in TransModeler 3.0 are reversible, giving you the first solution for reversing the direction of traffic in lanes or on whole streets or ramps by time of day, erasing the burden of maintaining separate models of the road network for AM and PM scenarios. You can simulate all of these facilities off the shelf without having to bother with custom plug-ins or paying more for add-on modules.



Expanded ITS Support

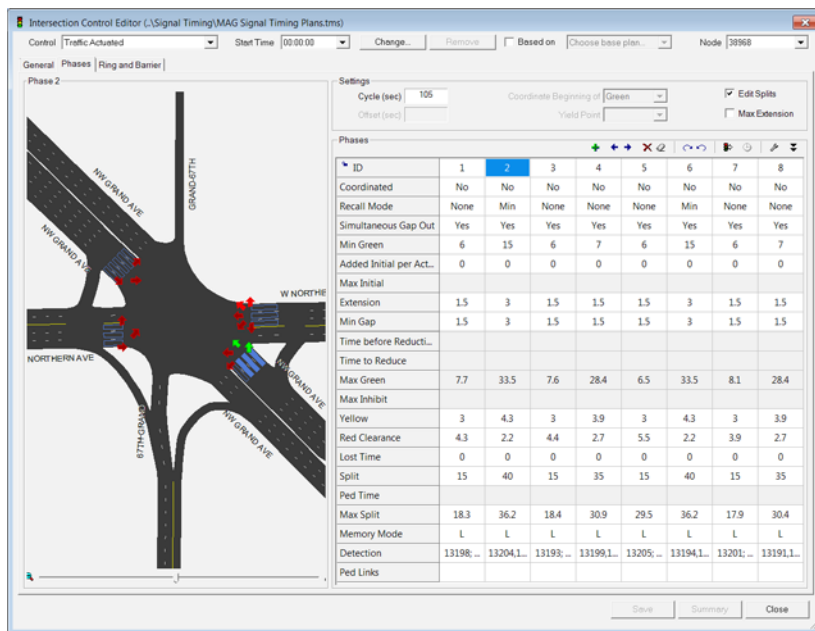
From version 1.0, TransModeler has been fully equipped to support the evaluation of a wide variety of intelligent transportation system (ITS) and traffic control and management solutions. Those solutions include updated travel time information provision, ramp metering signals, lane control signals, variable speed limit signs, and dynamic message signs (DMS) for conveying lane use information, road closure information, or high occupancy/toll (HOT) lane pricing information. TransModeler 3.0 expands ITS support to more complex, and more widely encountered, dynamic road pricing schemes, including zone-based and destination-based systems. Additionally, you can model detour message signs that steer traffic to designated routes in order to better manage incidents or special event traffic.

More Reports Including New HCM 2010 Levels of Service

TransModeler 3.0 offers more and better reports. New reports include Highway Capacity Manual (HCM) 2010 levels of service for freeways (including merge, diverge, and weaving segments), signalized intersections (both pretimed and actuated), all-way and two-way stop-controlled intersections, and roundabouts. Signalized and unsignalized intersection levels of service are also calculated according to the HCM 2010's analytic methods in the TransModeler Intersection Control Editor so that you can instantly see how changes to signal timings might affect performance. Additional reports include vehicle miles traveled (VMT) and vehicle hours traveled (VHT) aggregated by functional class, street name, or other roadway attribute of your choosing. You can also more easily determine the levels of service experienced by private and public transportation vehicles independently to better gauge the benefits of transit signal priority or other improvements.

Elaborate Time of Day Traffic Signal Timing Management

One of the most cumbersome traffic simulation model development tasks is the input and management of large amounts of often diffuse data. TransModeler is a convenient and easy-to-use relational data model for your entire traffic data inventory. The most challenging of these data to manage are traffic signal timings. TransModeler 3.0 now makes it easier than before to manage timings by time of day. You can link timings to a base plan so that when you need to make changes that apply to multiple plans, you only need to make them once. You can also define traffic detector placement templates with which to add detectors per approach or for all approaches with a single mouse click. Those detectors are then automatically assigned to their corresponding phase in all plans, saving you valuable time.



Innovative New Bicycle and Motorcycle Model

TransModeler has always been a multi-modal, multi-user model, supporting simulation of a wide variety of vehicle types (e.g., motorcycle, auto, truck, bus, and light rail) and user types (e.g., variable values of time, possession of electronic toll passes, and number of occupants). Version 3.0 is the first TransModeler to simulate bicycles that are permitted to pass or travel alongside one another within a lane or in a dedicated bicycle lane. You also have the option of allowing motorcycles to pass in a lane or travel side by side. An innovative modeling approach relaxes the strict car-following constraints of traditional driver behavior models and captures a motorcyclist's or cyclist's lateral clearance requirements as a function of their physical dimensions and speed.

Evolved Route Choice Methods and Calibration Tools

There are good reasons that microscopic traffic simulation of very large areas has long been dismissed as too difficult or too expensive. Traditional traffic simulation tools place the onus of determining the turning movements and routing decisions that drivers make squarely on the end user, a daunting task for even a modestly sized network in which route choice is important. Efforts to retrofit tools built for an altogether different paradigm with next generation route choice models have been half-hearted and overly simplistic. TransModeler derives from and builds upon the operations research and routing pedigree of its sister product TransCAD, and was conceived with route choice a principal design consideration. New tools in TransModeler 3.0 make answering difficult calibration questions easier, allowing you to compute goodness of fit measures between simulated data and field observations and to visualize and analyze paths used between O-D pairs, passing critical links, or making critical turning movements.

Improbably Fast

TransModeler 2.6 was fast, but TransModeler 3.0 sets a new standard for speed in microscopic traffic simulation and in simulation-based dynamic traffic assignment (DTA) methods. Thanks to the aggressive efforts of Caliper's expert software engineers and operations research specialists, and in part to emergent CPU architectures and the low cost of memory, TransModeler has evolved algorithmically and computationally to exploit affordable computing resources to unprecedented effect. TransModeler 3.0 adds the exclamation mark to the point that was proven by prior versions of the software – that high fidelity microscopic simulation is realizable at geographic scales previously believed to be impossible.

Broader Range of Local Parameters

TransModeler 3.0 has a broader range of local parameters to help you better replicate observed traffic phenomena. TransModeler is the most robust traffic simulator in the world, with intelligent models that automatically determine the priorities between turning movements and the situational behaviors of drivers (e.g., merging, weaving, and driving through roundabouts). TransModeler is a powerful microsimulator that doesn't need to be painstakingly micromanaged. However, TransModeler 3.0 recognizes more than any prior version of the software that modelers are commonly faced with the challenge of modeling unique traffic conditions. That's why TransModeler 3.0 offers more control over local parameters that govern the composition of the vehicle fleet, the temporal distribution of traffic demand, and a variety of driver behaviors including entry lane bias at roundabouts. Editing and managing parameters is also easier than ever, with one-click buttons to restore your modified parameters to the global default values.

Unprecedented Extensibility

TransModeler 3.0 adds to the software's built-in scripting language and custom add-in development environment, the GIS Developer's Kit, an all-new application programming interface (API) that allows you to develop custom signal operations applications and other specialized modules in any .NET Framework-supported language (e.g., C#, Visual Basic .NET, and C++) of your choosing. Prior to TransModeler 3.0's official release, the API has already been applied in several innovative projects by end users. These applications include a traffic signal controller algorithm with light rail transit priority, a vehicle tracking algorithm, and a dynamic road pricing algorithm for the Capital Beltway HOT lanes in Northern Virginia. Even before the API, TransModeler's unique GISDK was used at numerous universities to simulate evacuation scenarios, ramp metering algorithms, and cell phone vehicle location applications.

Proof in Practice

Don't take our word for it. Ask us for a list of references or for a demonstration of the growing body of evidence that TransModeler is the only choice for wide area traffic simulation, simulation-based dynamic traffic assignment, innovative road pricing projects, or other challenging traffic simulation endeavor. Or, ask us to show you any of a number of innovative examples of TransModeler in action, including the first city-wide TransModeler microsimulation project in Eureka, CA, a nearly county-wide microsimulation model in Lake County, CA, and a trail-blazing 500-square mile microsimulation model of Central Phoenix, a model that simulates more than 2 million peak period trips, more than 90 bus routes, a light rail line, and more than 1,800 signalized intersections. Caliper can also point you to examples of successfully completed projects by its growing base of users all across the US and in China, Europe, and South America.



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