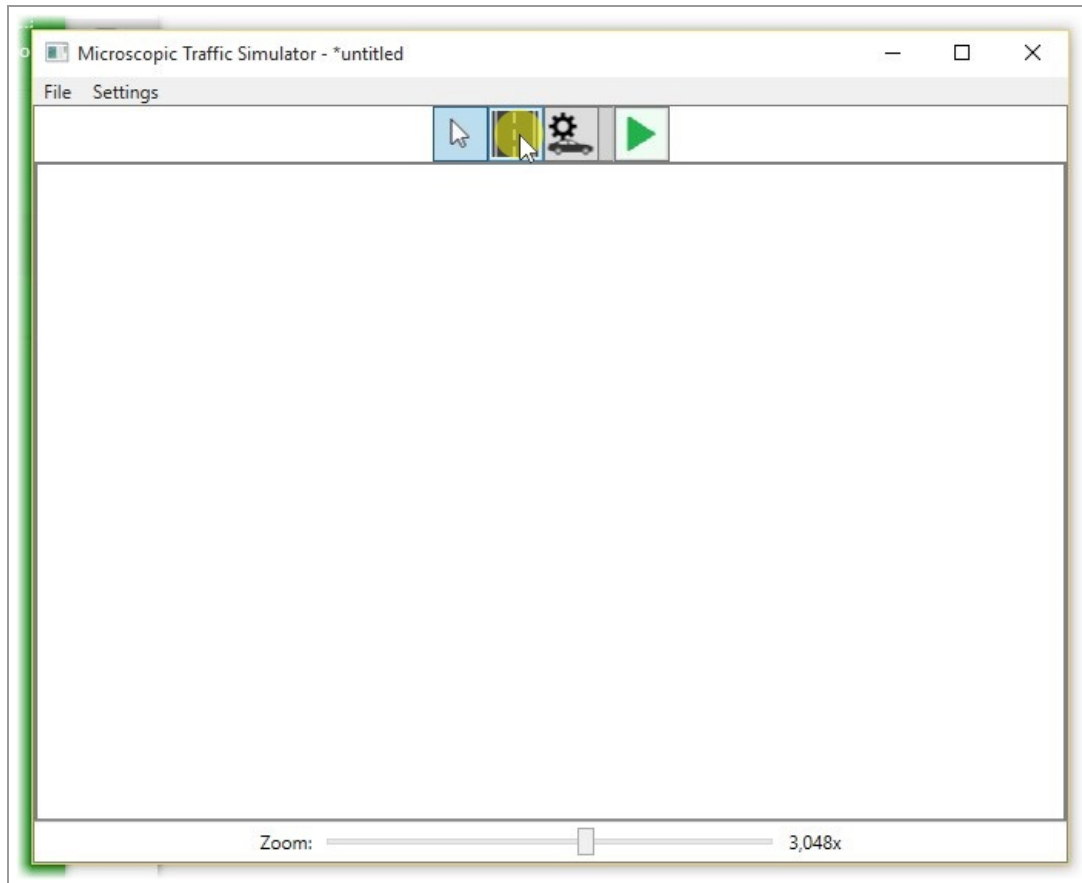


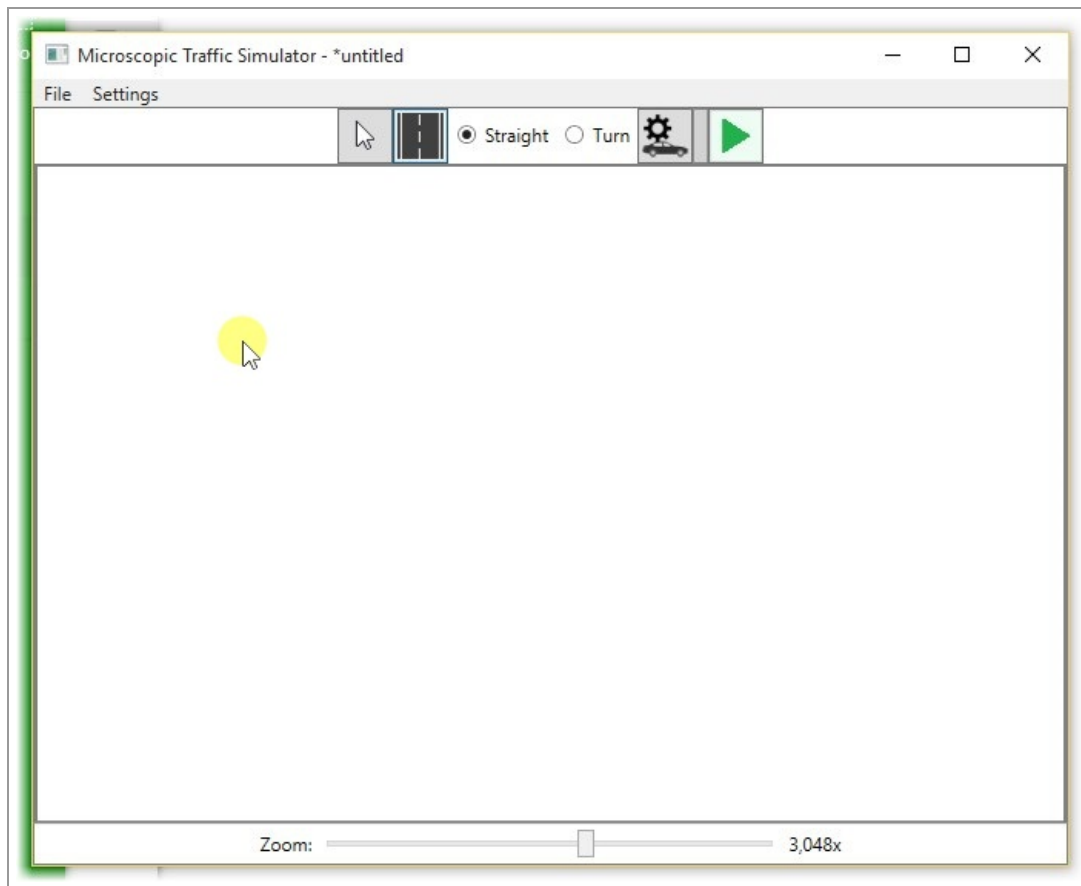
# Microscopic Traffic Simulator - User Guide

## Lane construction



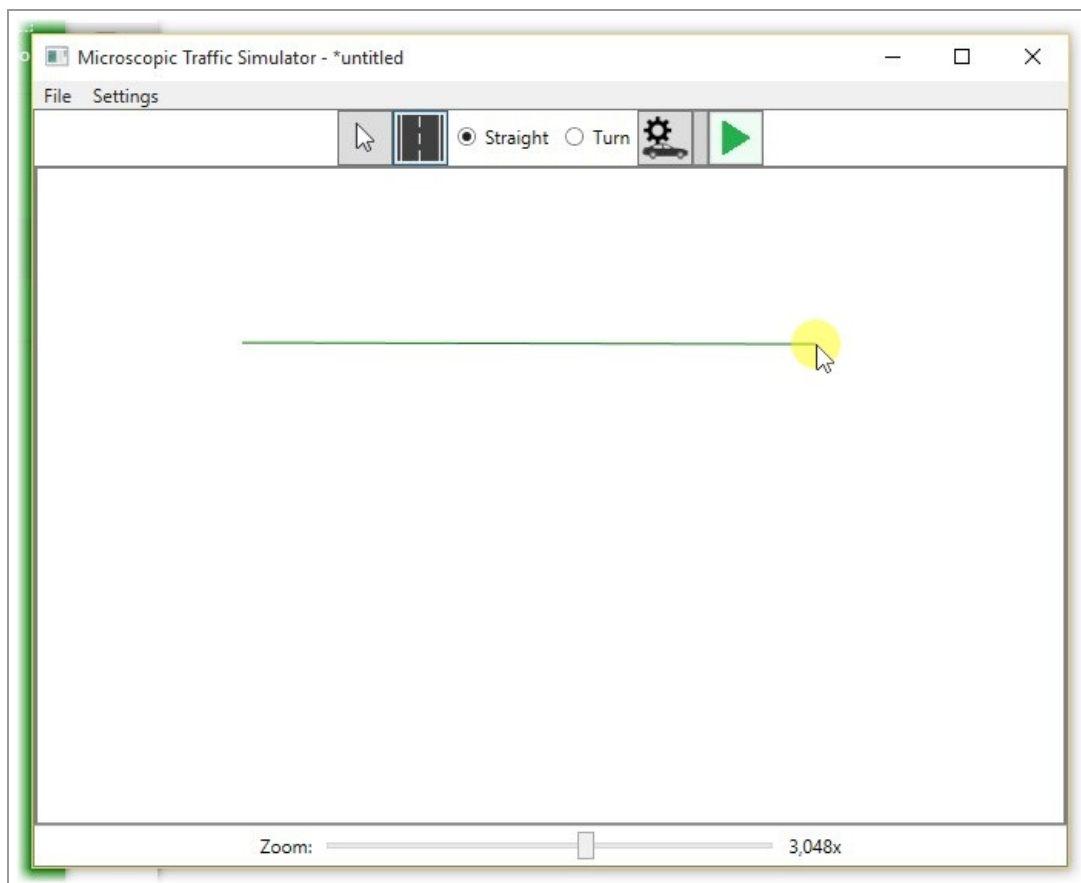
Click on the road icon to enable the construction mode.

## Straight lane construction



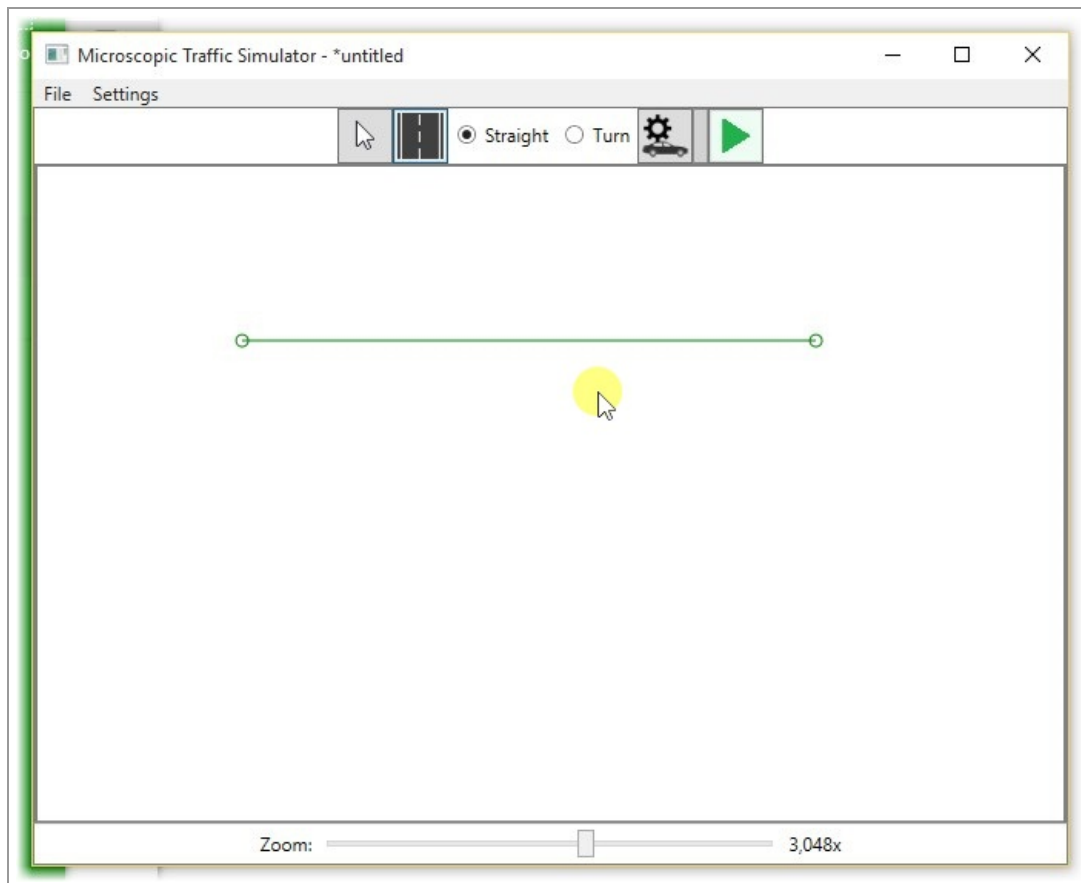
Leave option for building a straight lane and click anywhere on the canvas to define the start point of the lane.

## Straight lane construction



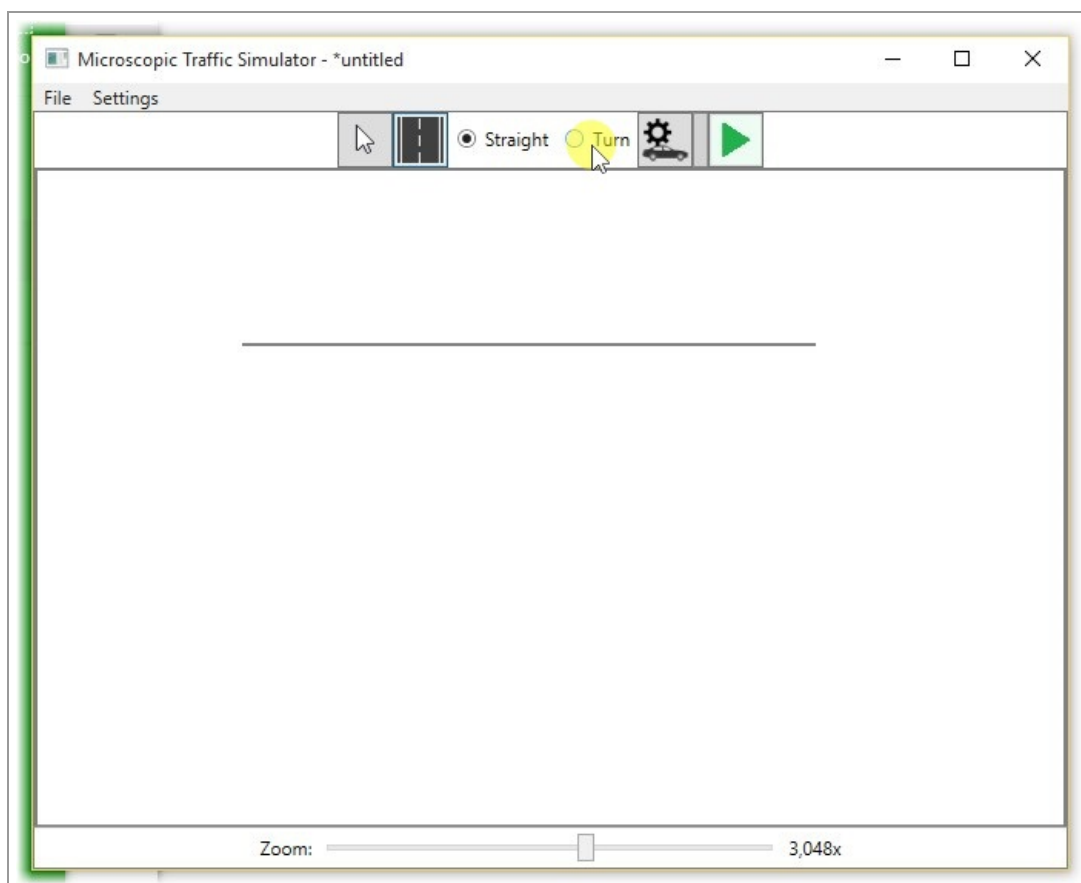
Move the mouse cursor to another location on the canvas to define the end point of the lane.

## Straight lane construction



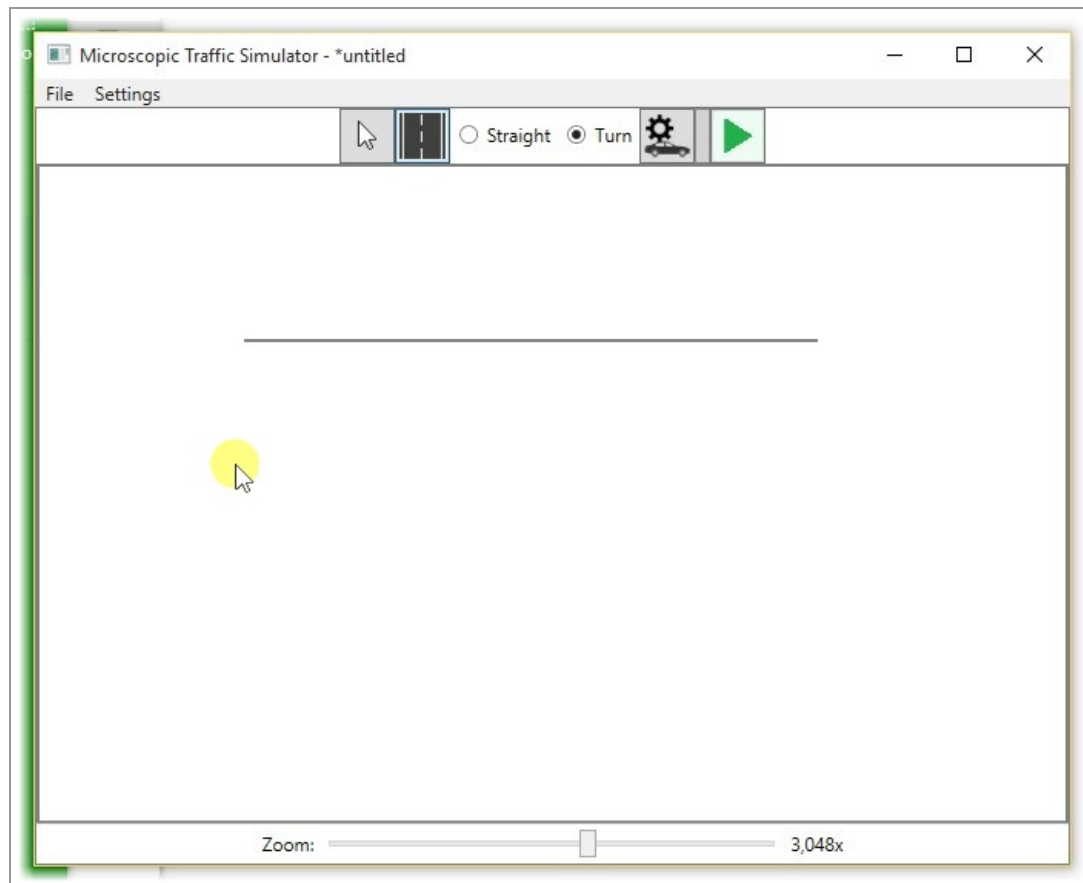
Click again anywhere on canvas to build the lane.

## Turning lane construction



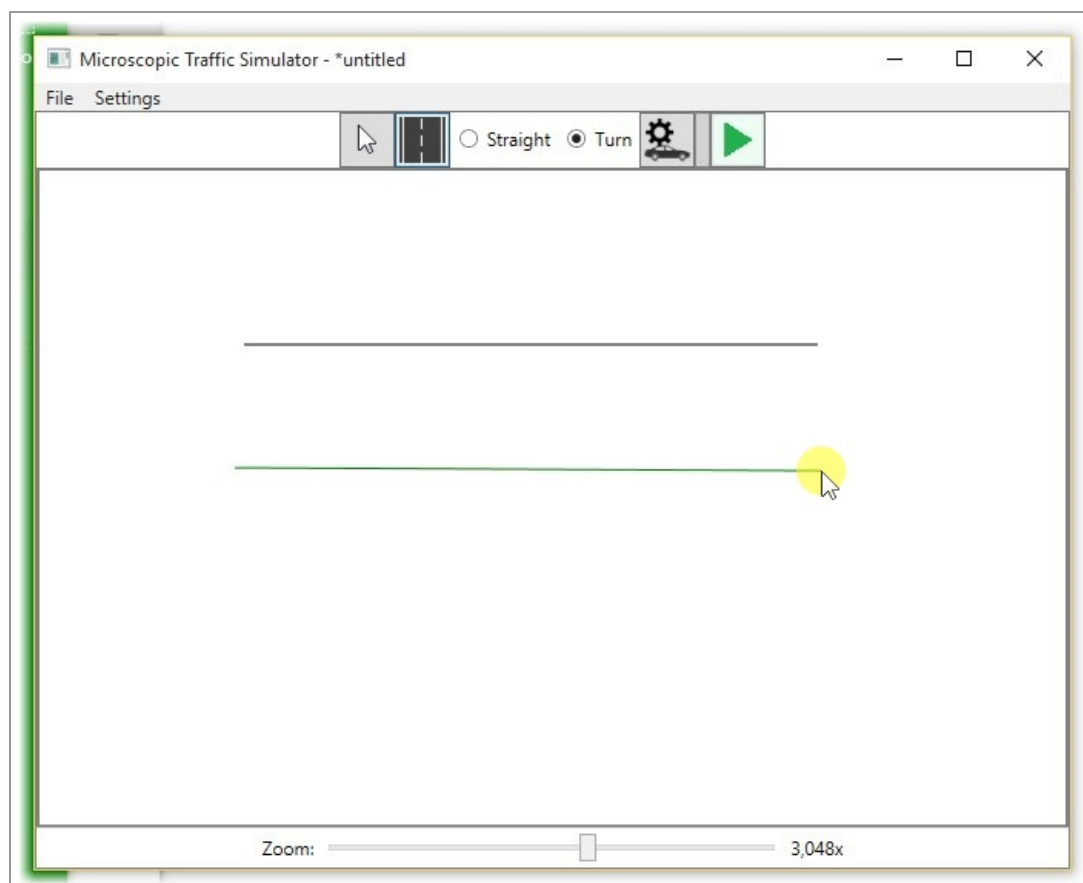
The lane is built. Now select option for turning lane.

## Turning lane construction



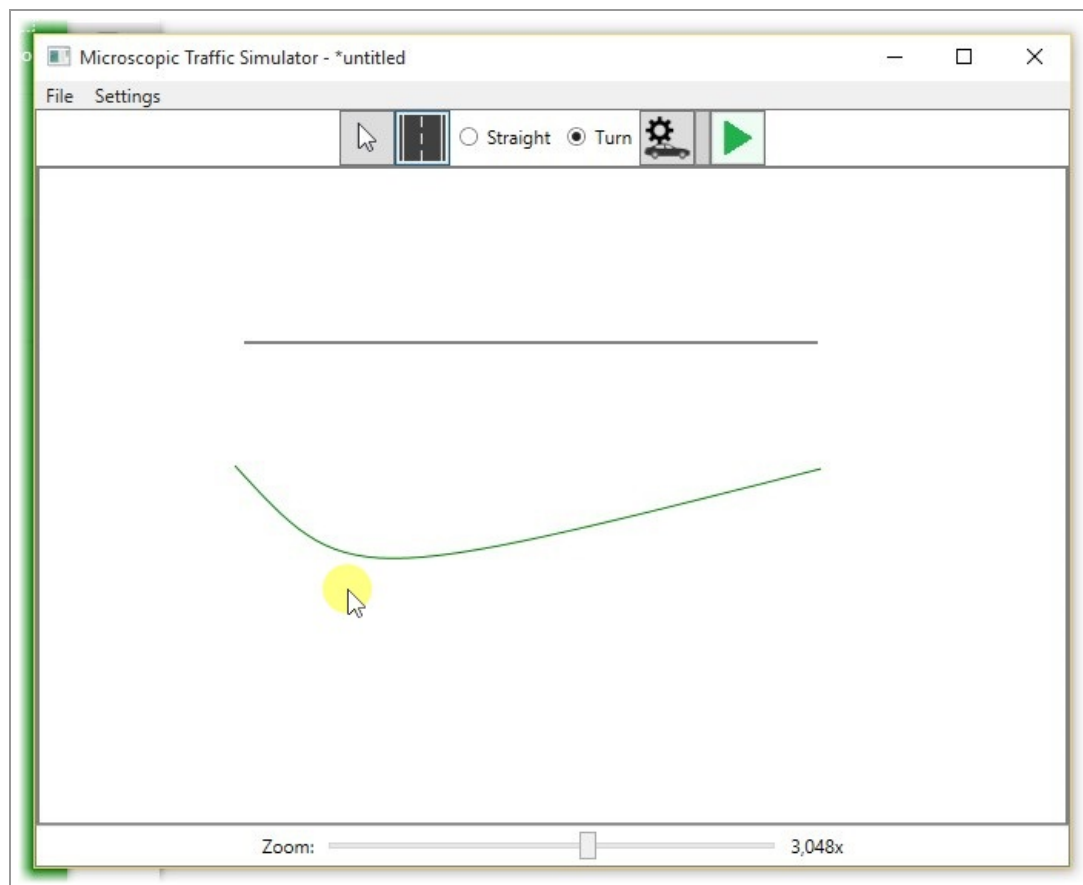
Click anywhere to define the start point of a new lane.

## Turning lane construction



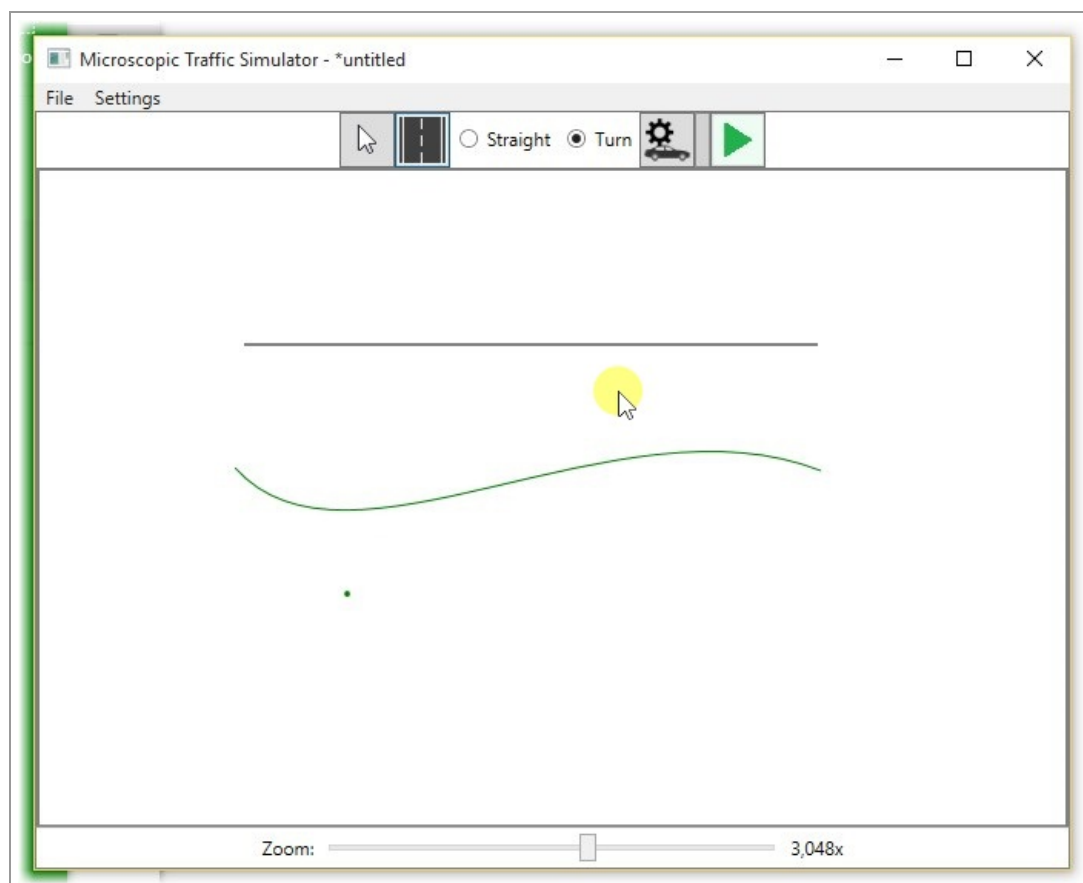
Click anywhere to define the end point of the lane.

## Turning lane construction



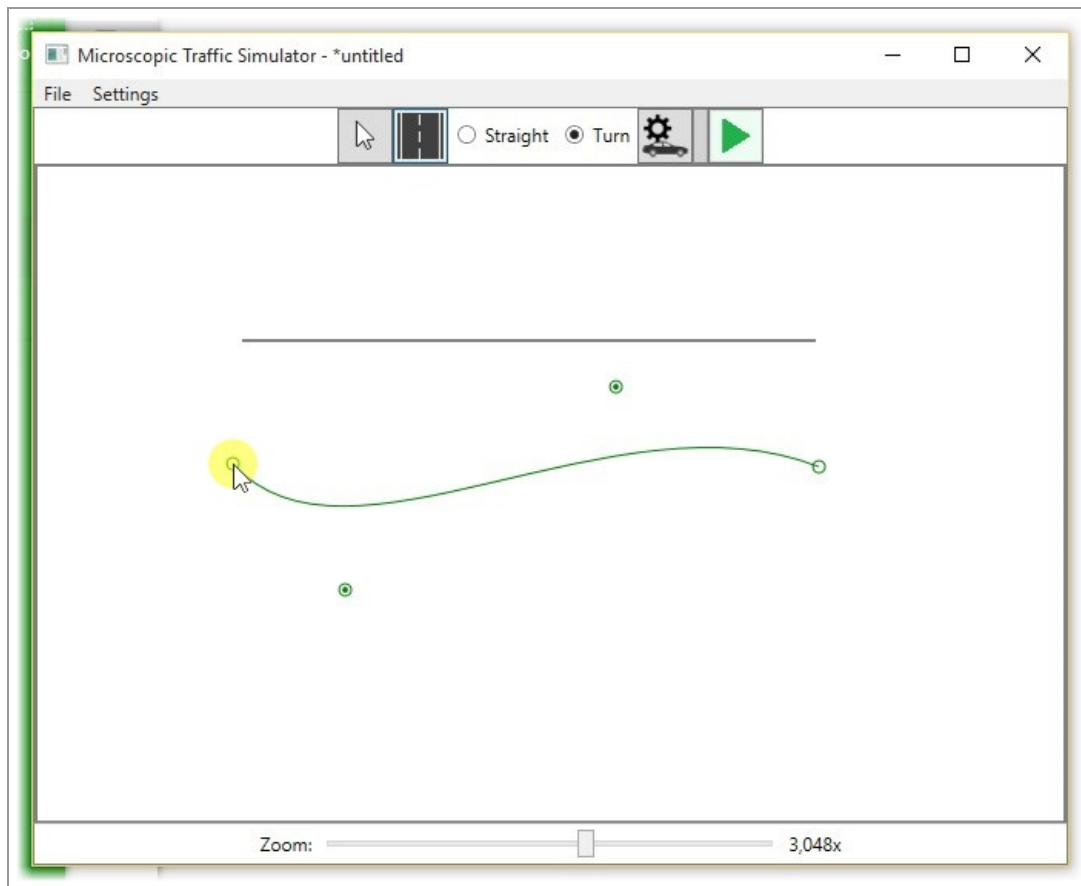
Click anywhere to define the first control point of the lane.

## Turning lane construction



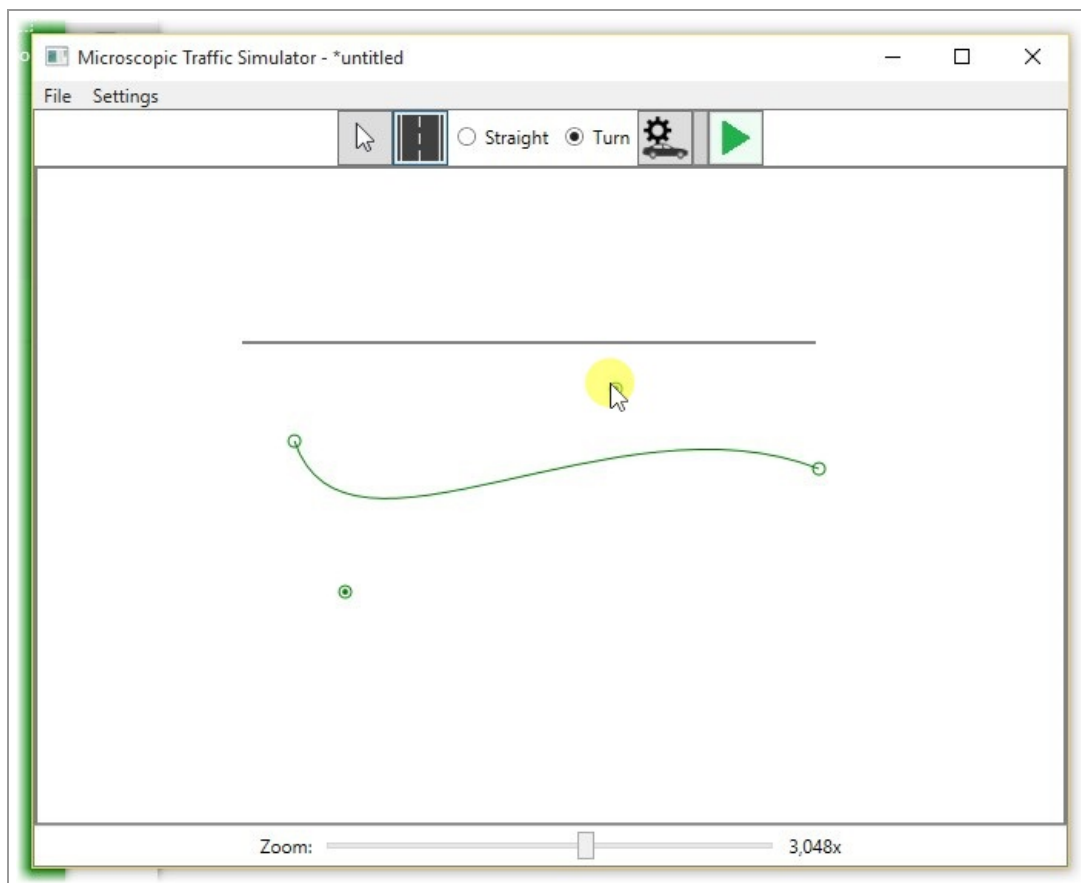
Click anywhere to define the second control point of the lane.

## Lane construction



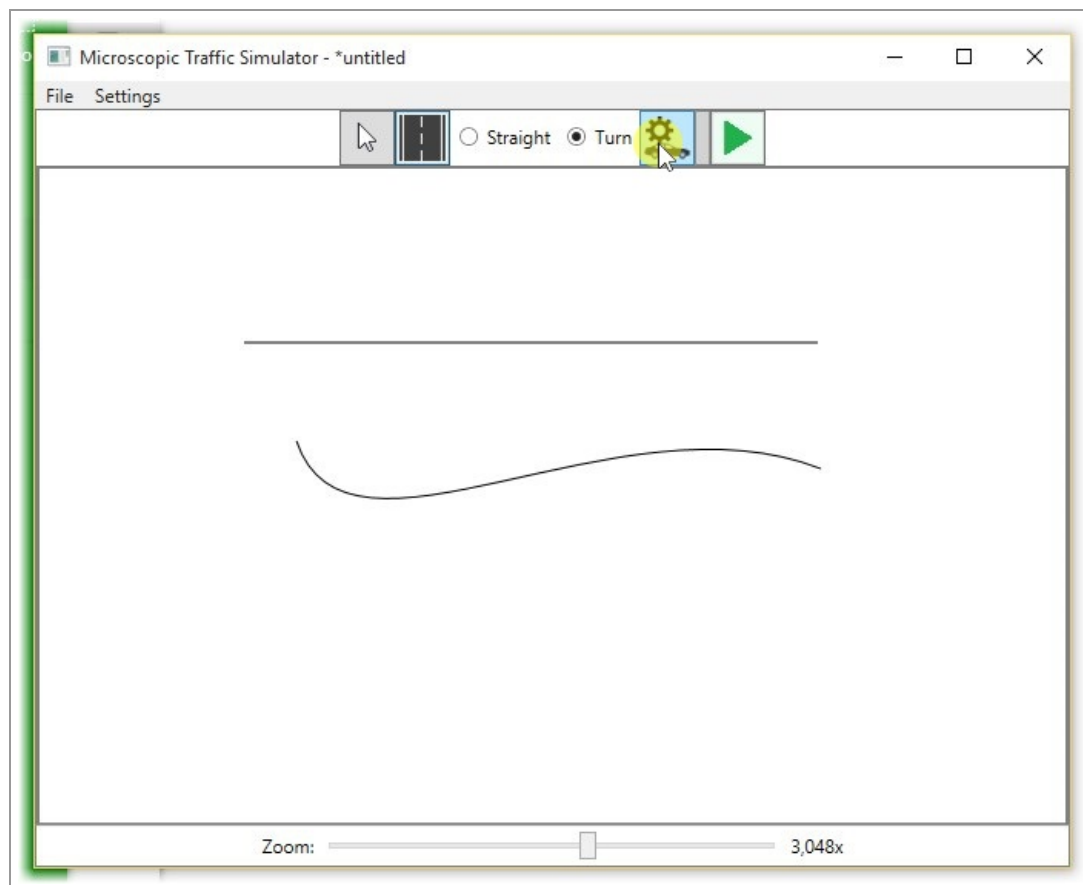
It is possible to drag either the start point or the end point.

## Turning lane construction



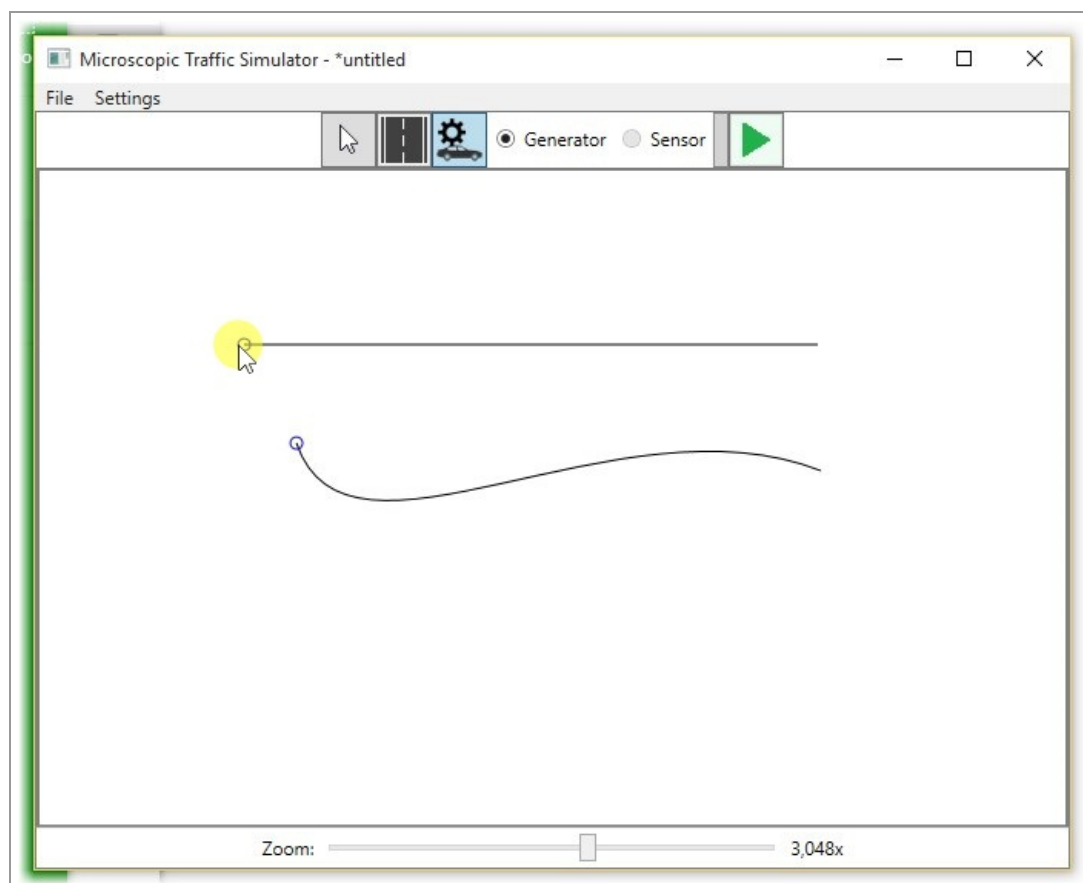
In case of building it is possible to drag a turning lane one of the control points as well to modify the lane.

## Generators construction



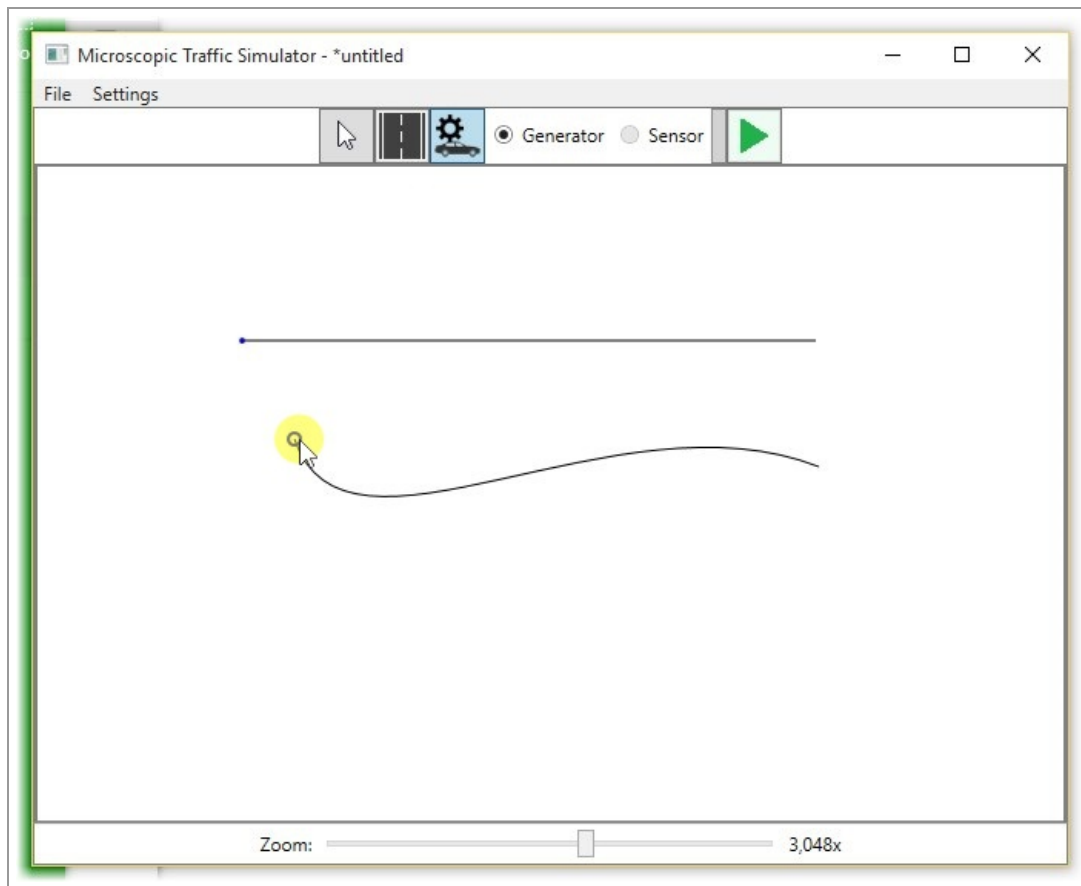
To build generators click on the icon as it is shown on the picture.

## Generators construction



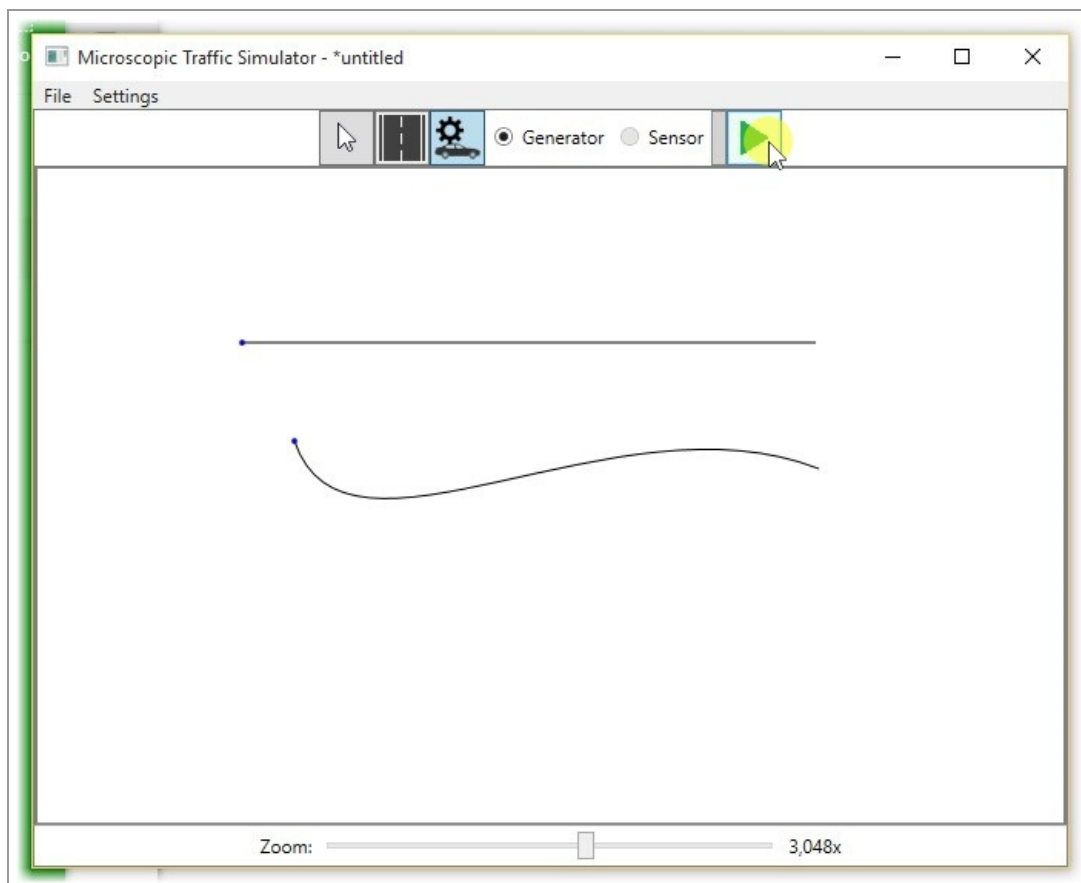
Click on one of the points surrounded by circle to build a generator.

## Generators construction



Build another generator.

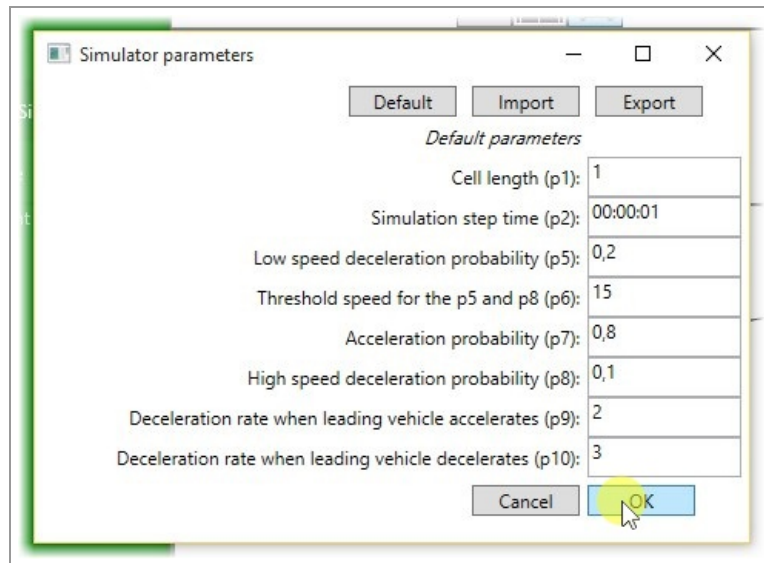
## Simulation mode



To enable simulation mode click on the icon as it is shown on the picture. The topology can be saved to a file by clicking on "File" and "Save" or "Save As" options. It is possible to open a previously saved topology by clicking on

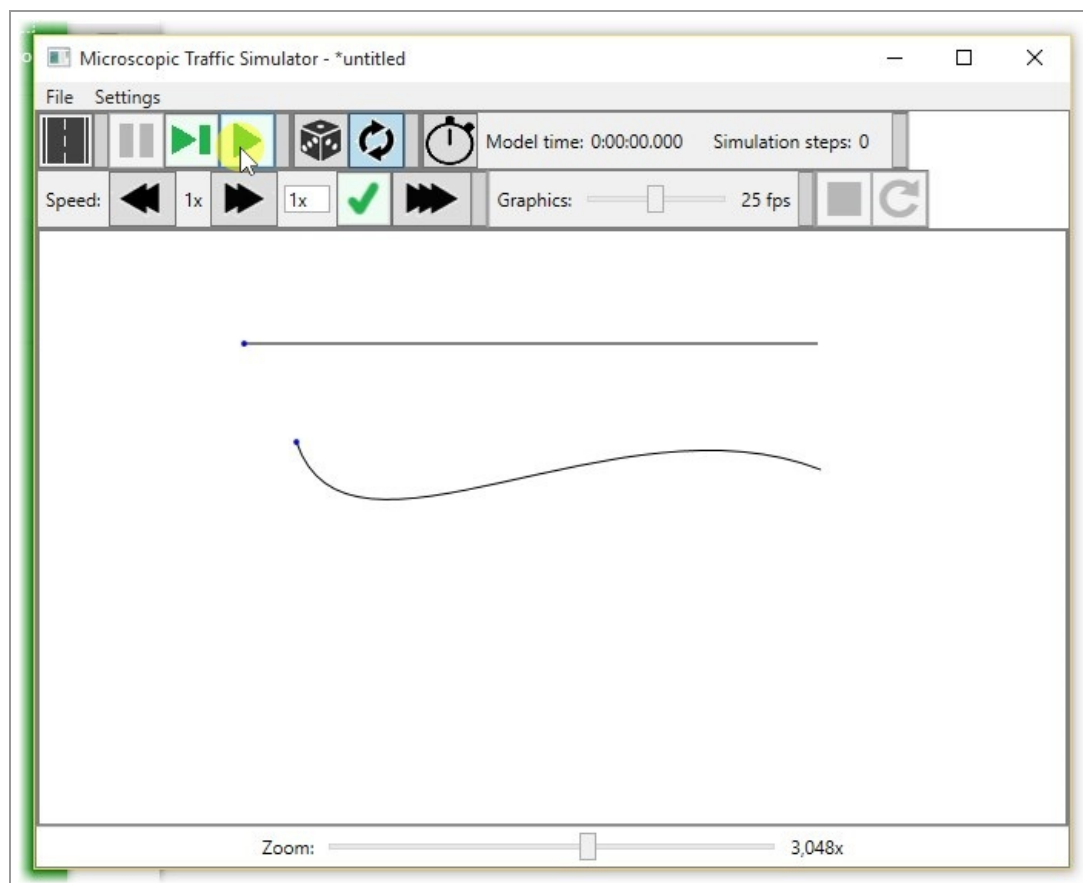
"File" and "Open" option.

## Simulation parameters settings

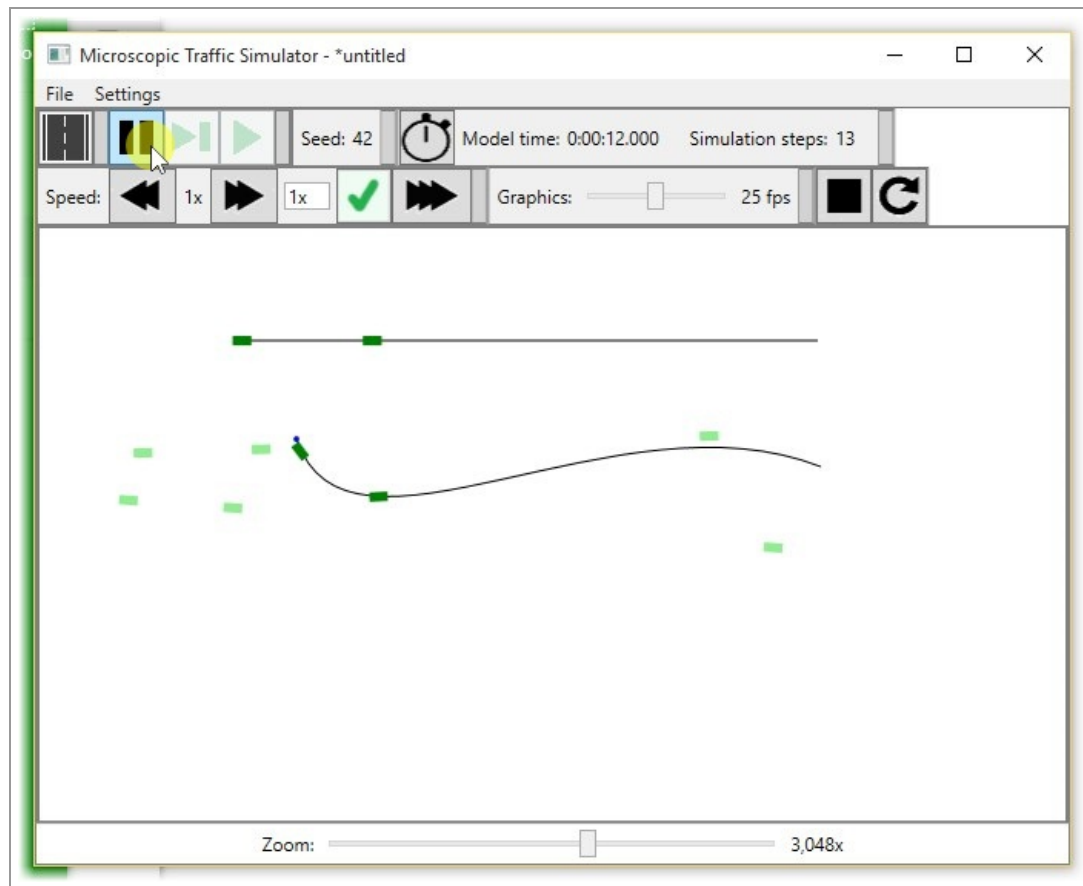


Dialog where the simulation parameters are shown is displayed. The simulation parameters can be exported or imported.

## Simulation



# Simulation



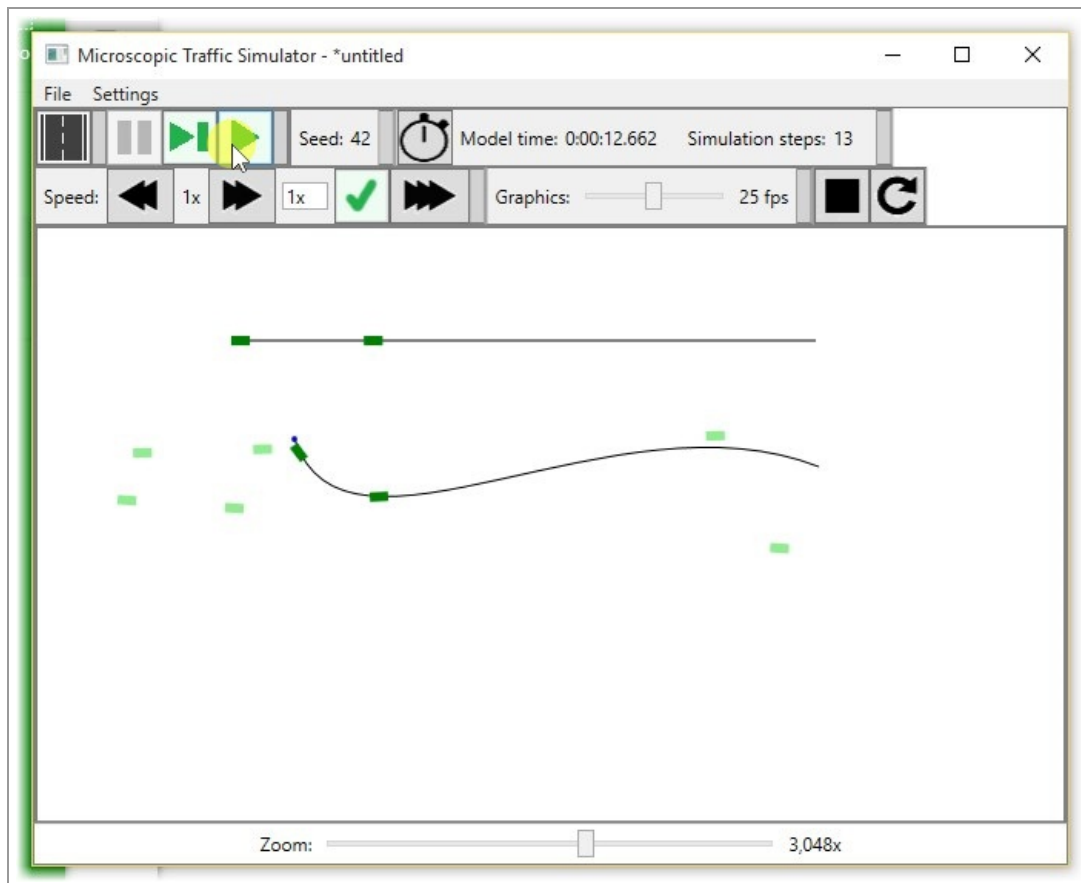
The simulation is started.

The cars with a light color are the cars from the input GPS records which can be defined in the "gpsin.txt" file located in the same folder as the simulator executable file. Each line in the file consists of line with format "[X-coordinate:double],[Y-coordinate:double] [X-direction-vector:double],[Y-direction-vector:double] [simulation-time-in-format-HH:MM:SS-:DateTime] [car-unique-id-Int32]". The GPS records of the current simulation are automatically recorded after the simulation is stopped to file gspout-N.txt where N is some number.

Sensors are automatically located on each lane on the 100th cell from the beginning. The cars from the sensors are generated according to records in file "in.txt" located in the same folder as the simulator executable file. Each line in the file consists of lines with format "[simulation-time-in-format-HH:MM:SS-:DateTime] [speed-in-kph:Int32]". The sensors detect the incoming cars and save the simulation time and their speed. After the simulation is stopped the files are saved to file "out-N.txt" where N is some number.

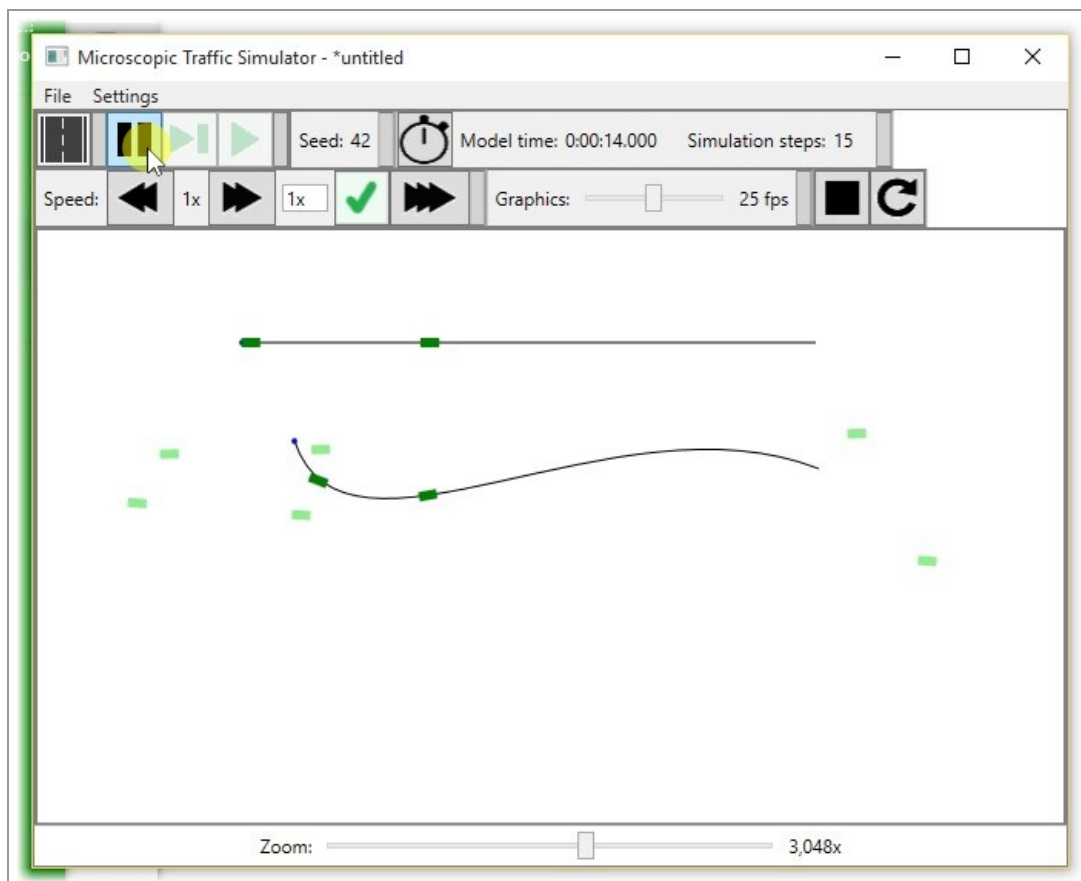
It is possible to pause the simulation.

## Simulation



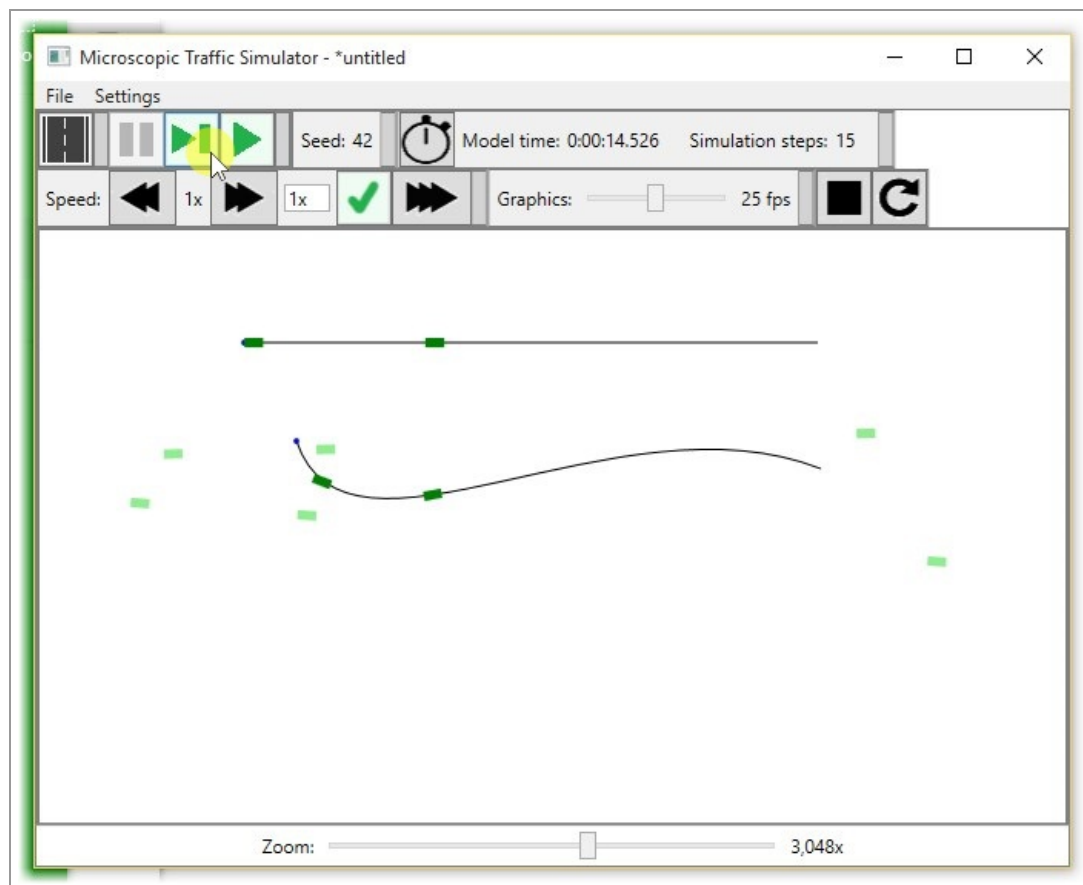
The simulation can be again resumed.

## Simulation



The simulation can be again paused.

## Simulation



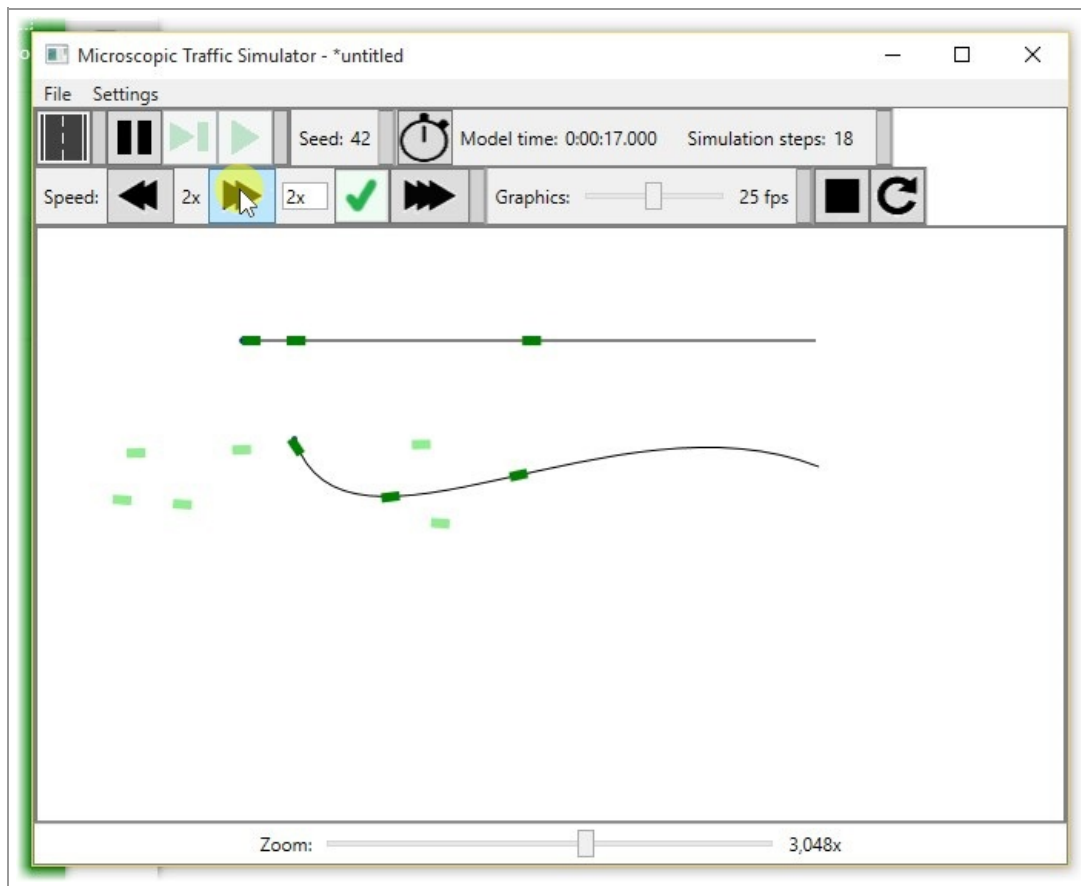
It is possible to perform single simulation step. Either the transition function is performed and all cars moves forward or a generator prepares new car.

## Simulation



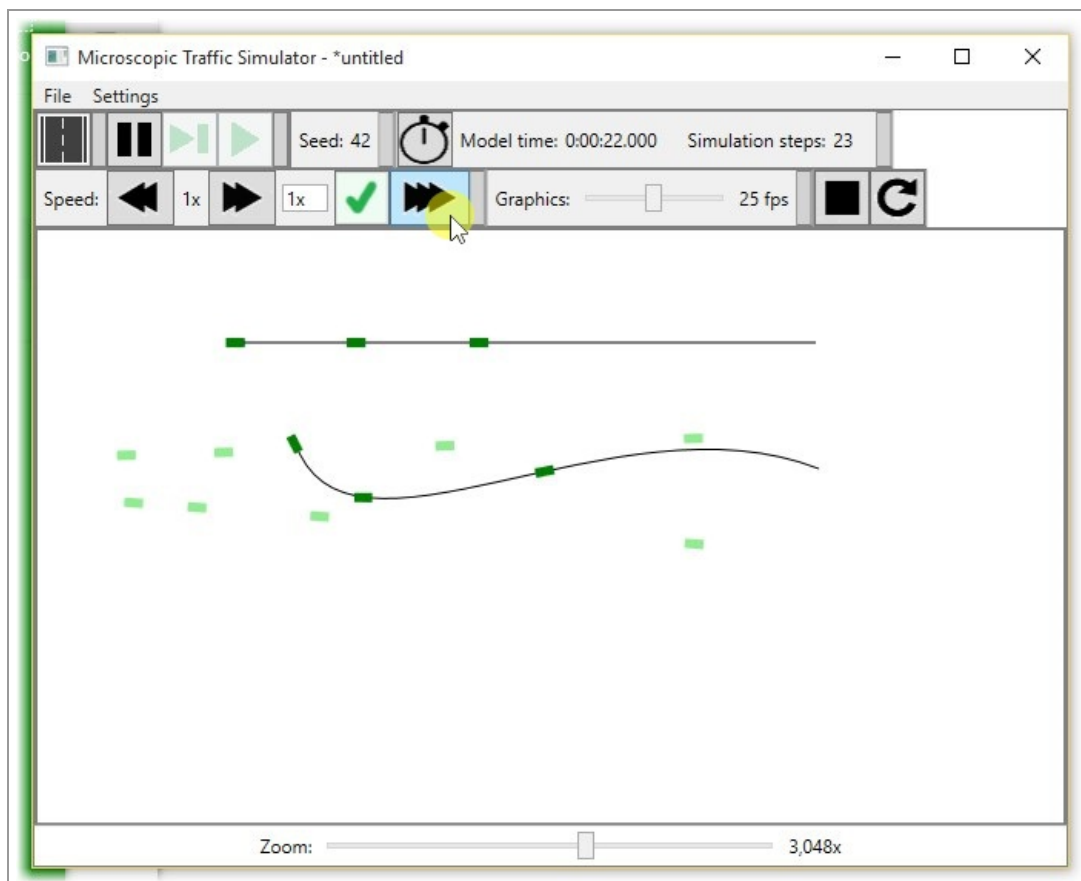
Simulation is always possible to resume when it is paused.

## Simulation



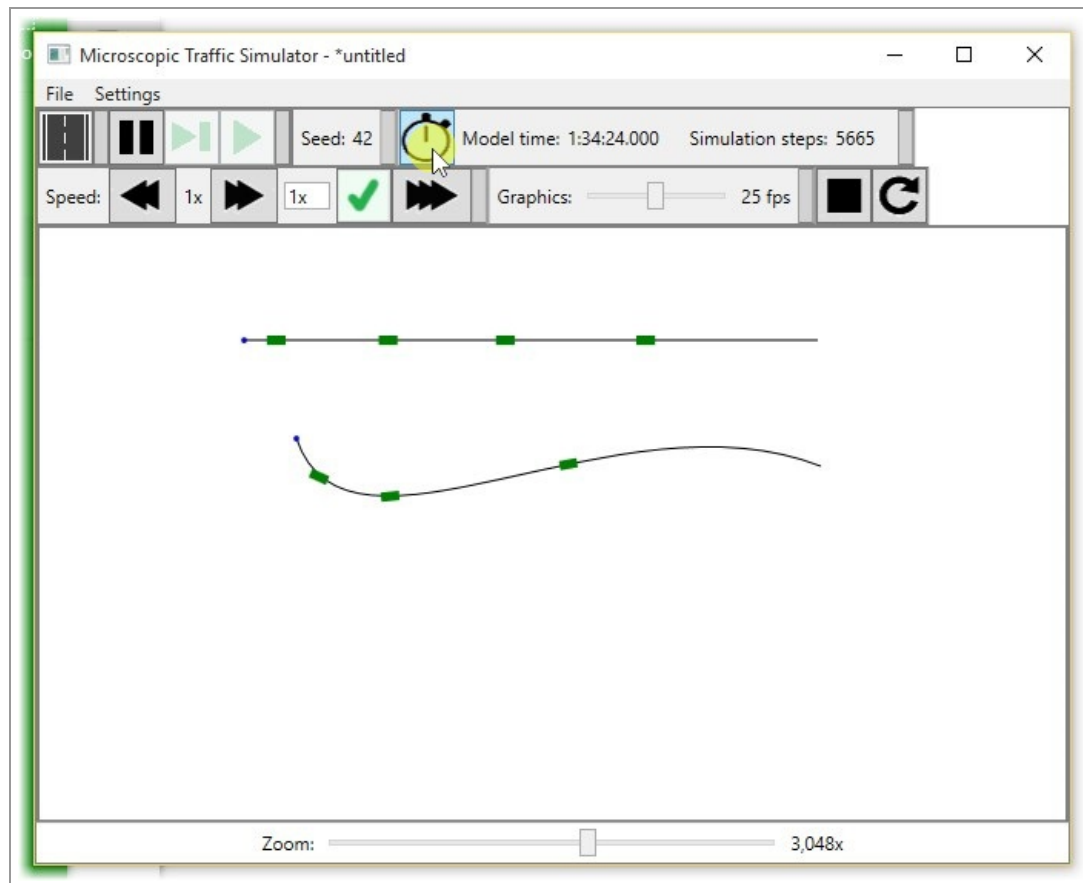
It is possible to speed up simulation or slow down.

## Simulation



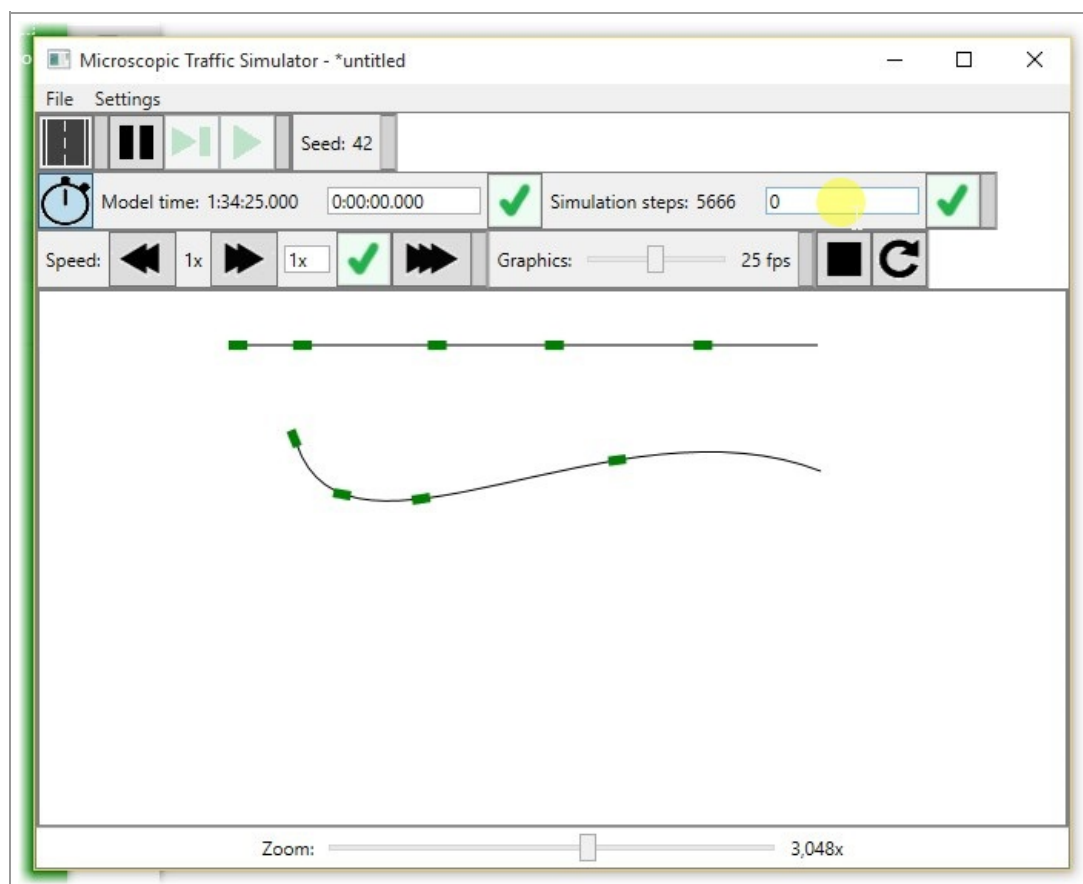
It is possible to run simulation at maximum speed using all cpu power.

## Simulation alarm



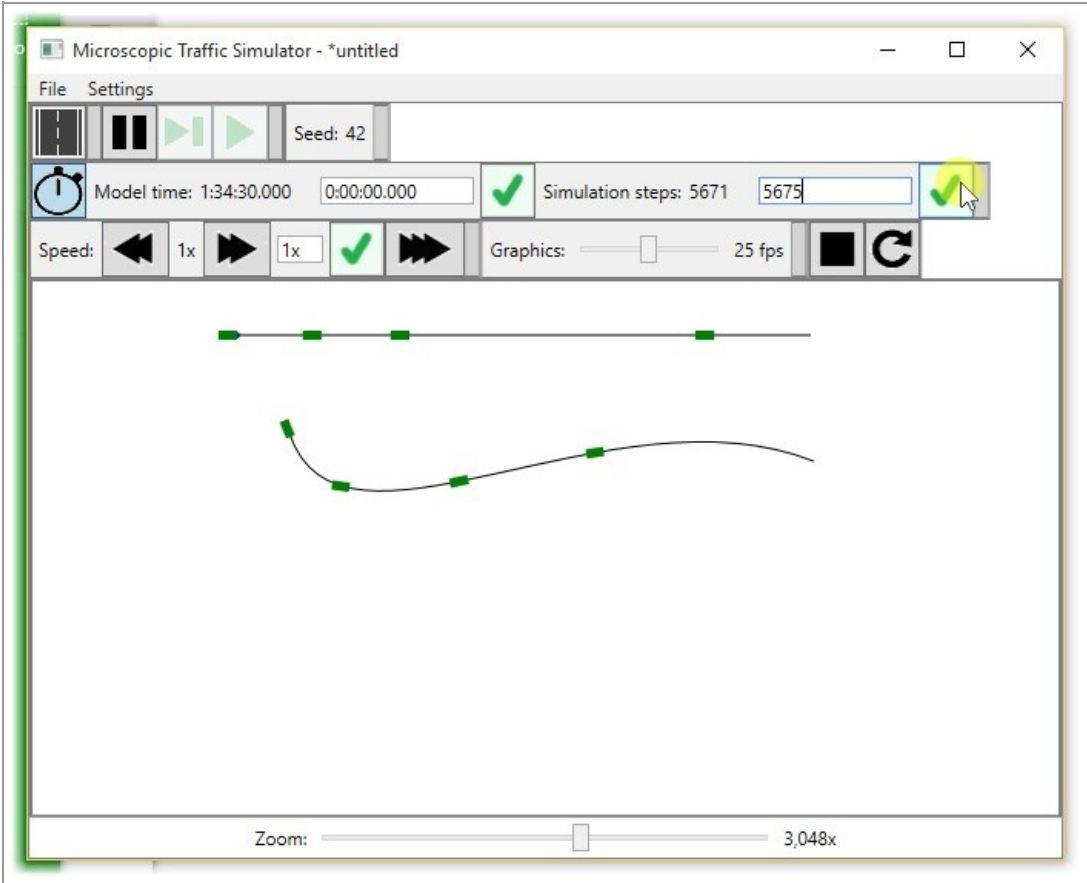
It is possible to use simulation alarm. To activate it it is needed to click on the icon as show on the picture.

## Simulation alarm



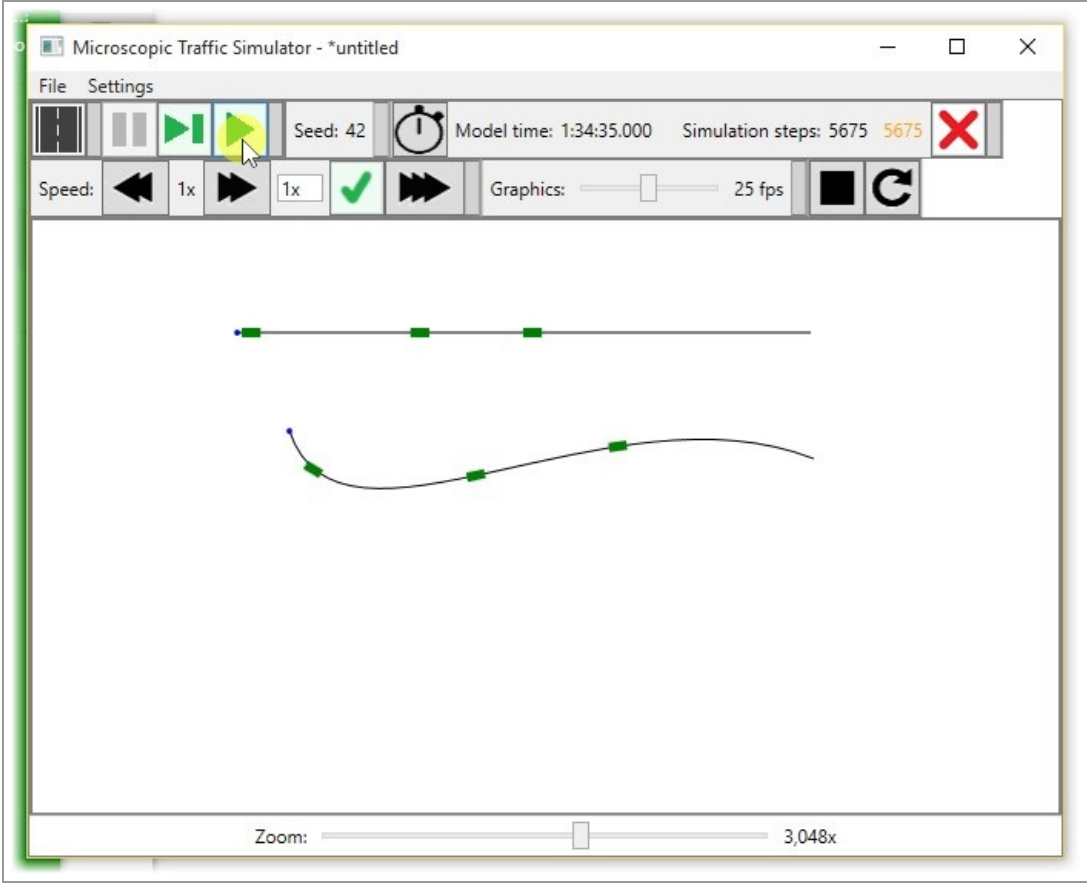
For setting simulation alarm it is needed to set either the value of model time or the simulation step number when the simulation have to be paused.

# Simulation alarm



Simulation alarm setting is confirmed by tick icon.

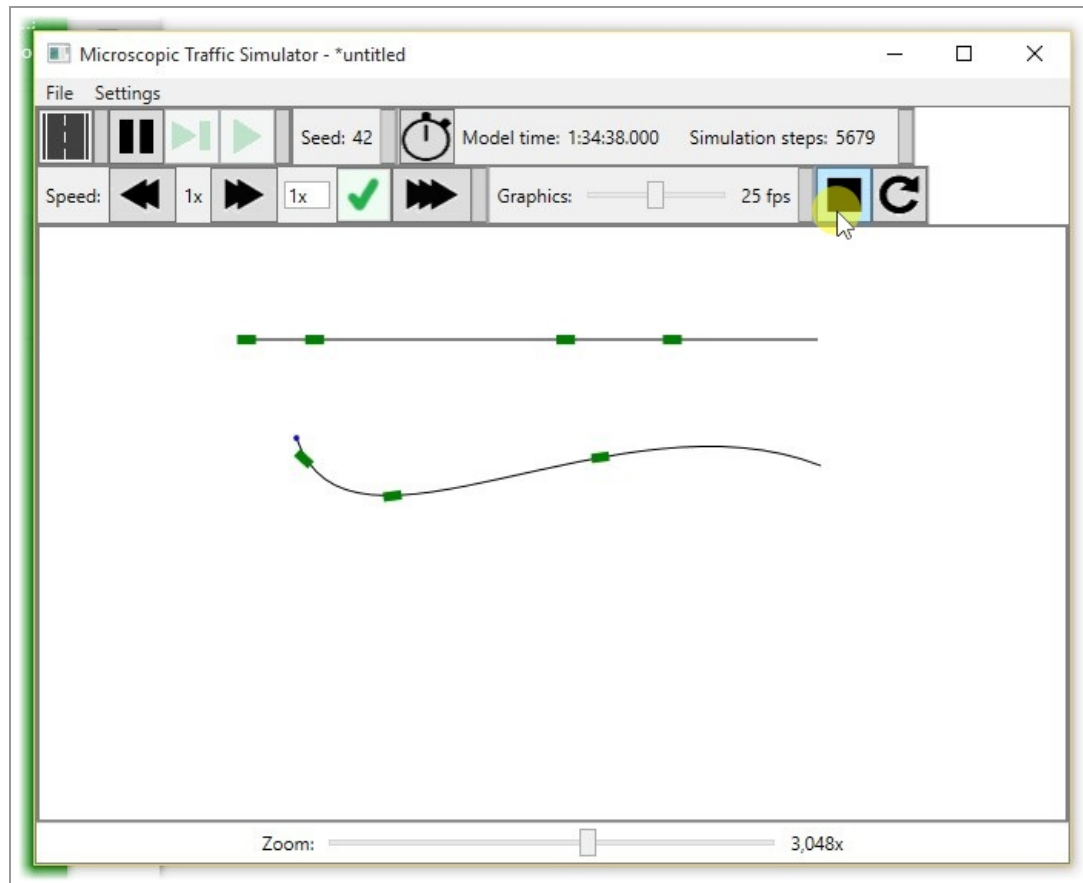
# Simulation alarm



Simulation alarm pauses the simulation when the condition is met. Then it is again possible to resume the

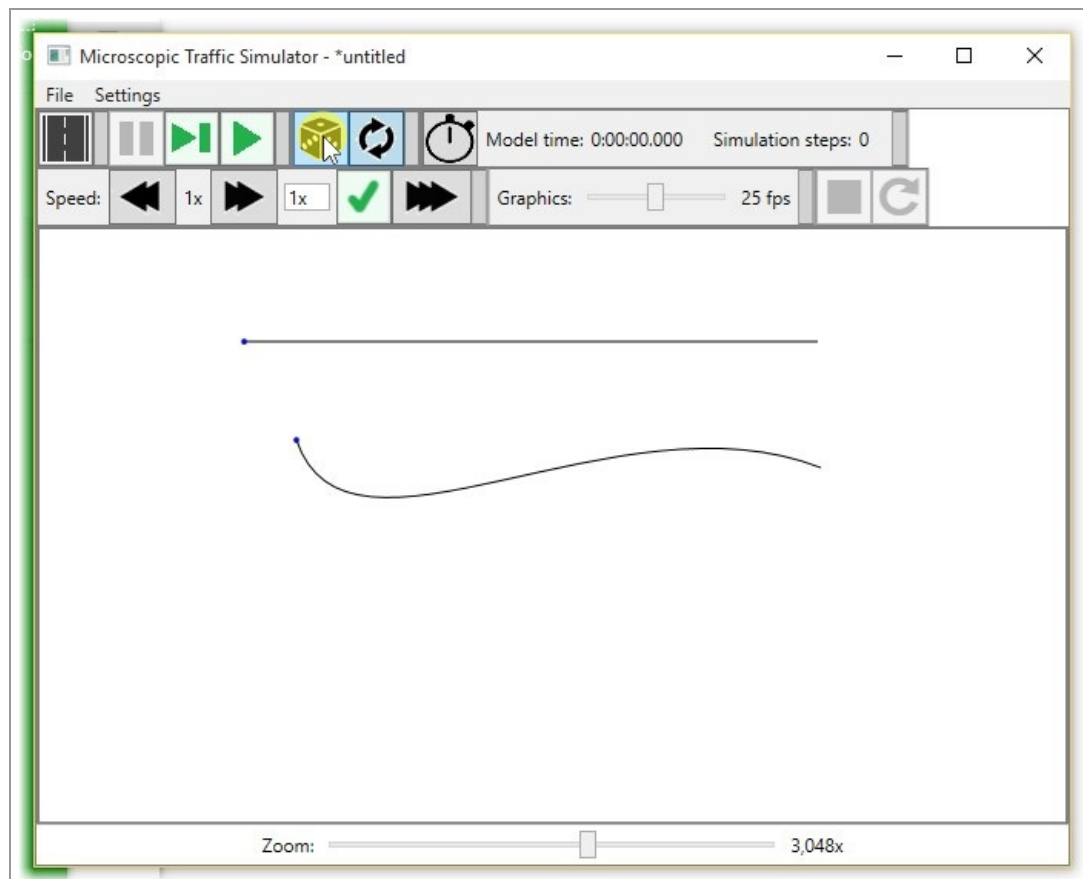
simulation.

## Simulation



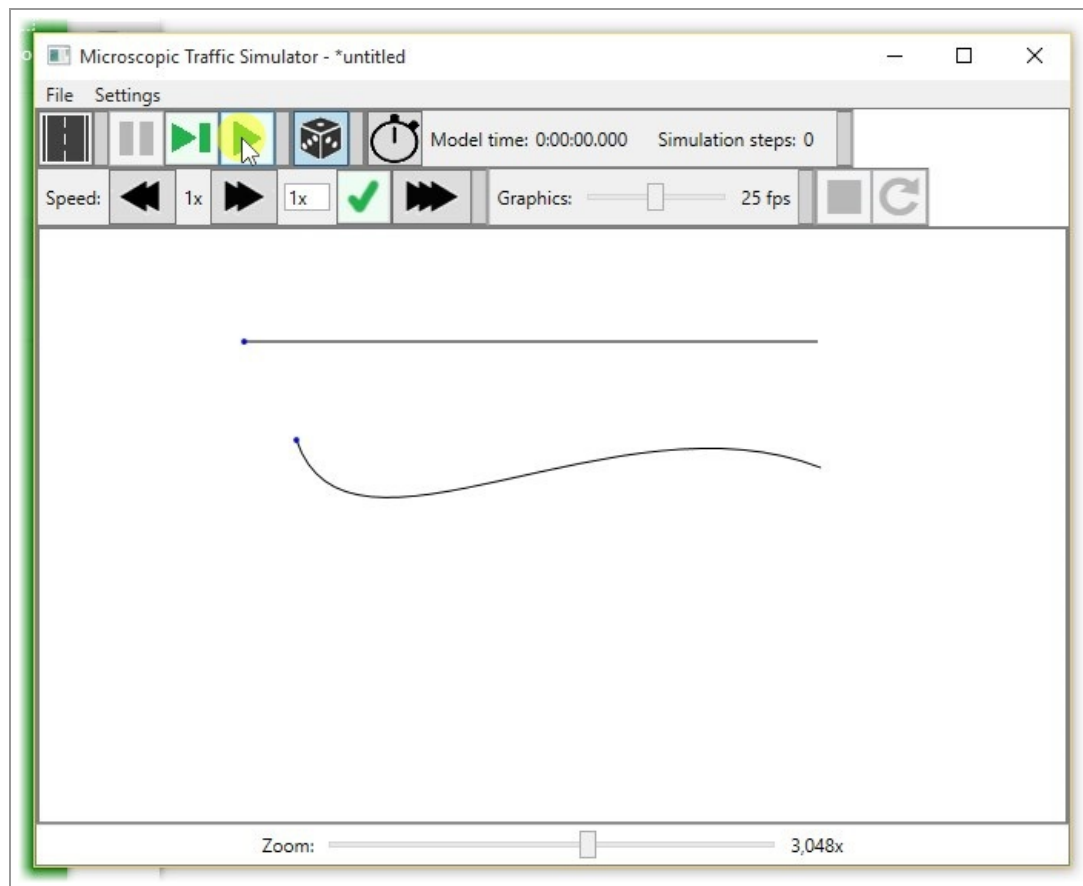
By clicking on the icon as shown on the picture the simulation is stopped.

## Simulation seed



Before running each simulation it is possible to set a way how to generate a seed for creating stochastic character of simulation events.

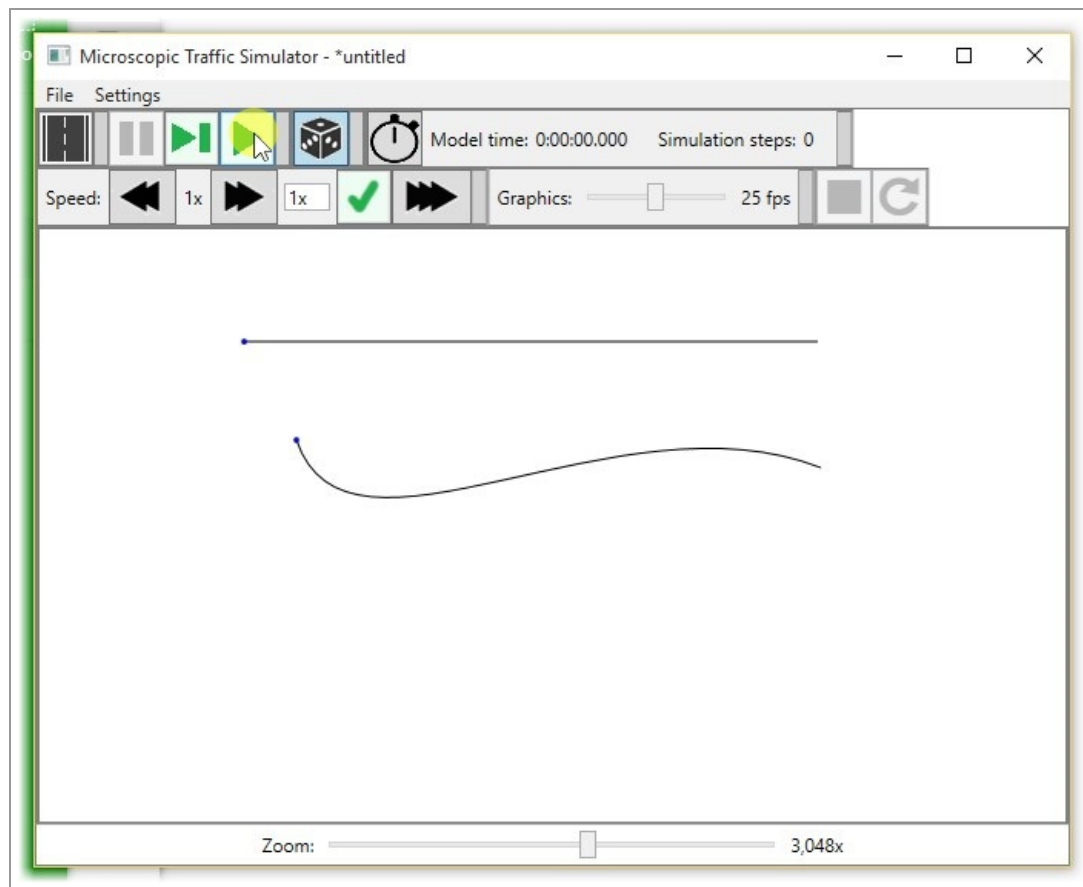
## Simulation seed



By checking the dice icon the seed is generated randomly.

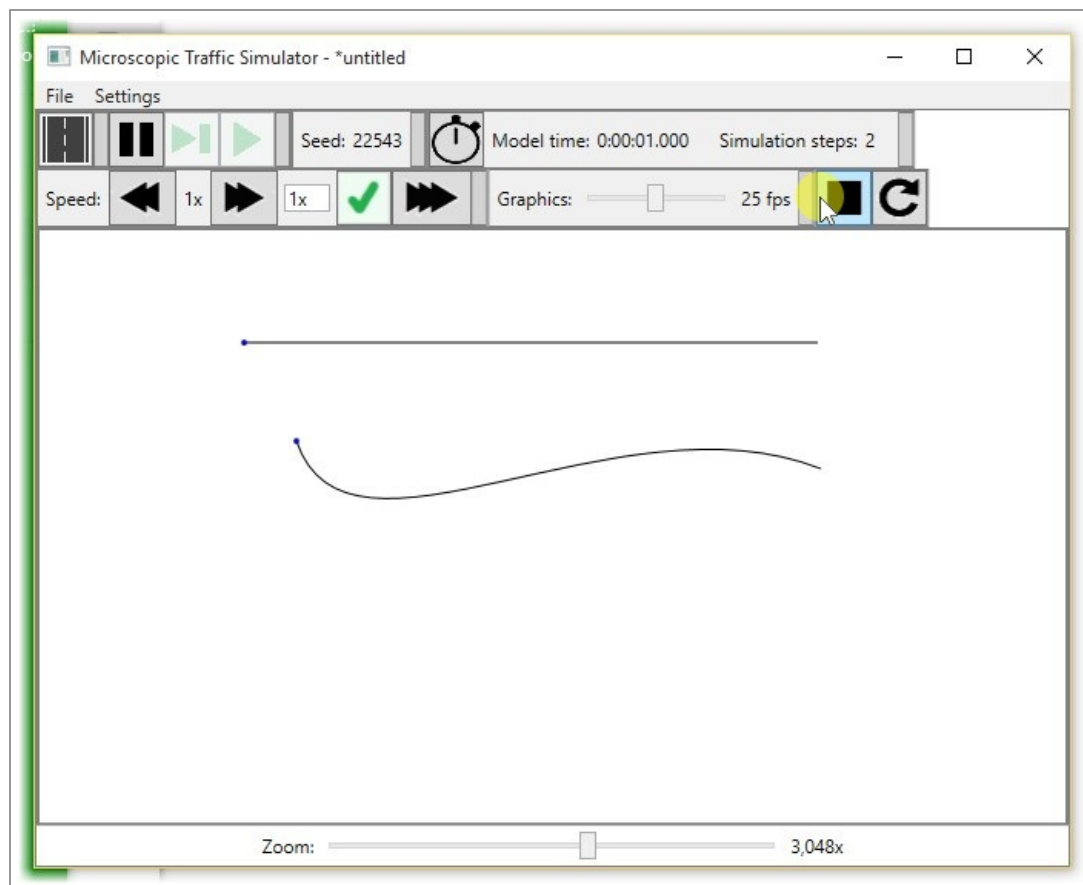
During the simulation the seed is displayed until the simulation is stopped or restarted.

## Simulation seed



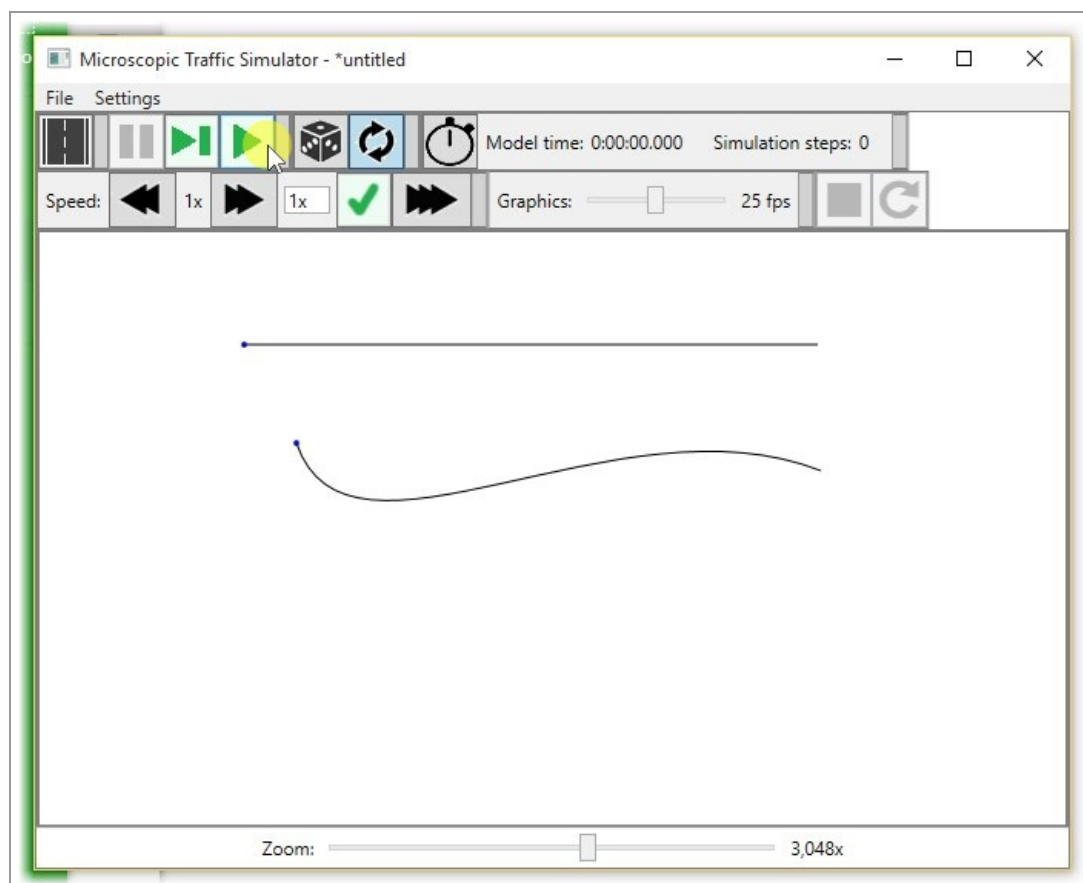
By running a new simulation when the dice icon is checked the simulation will have new random seed.

## Simulation seed



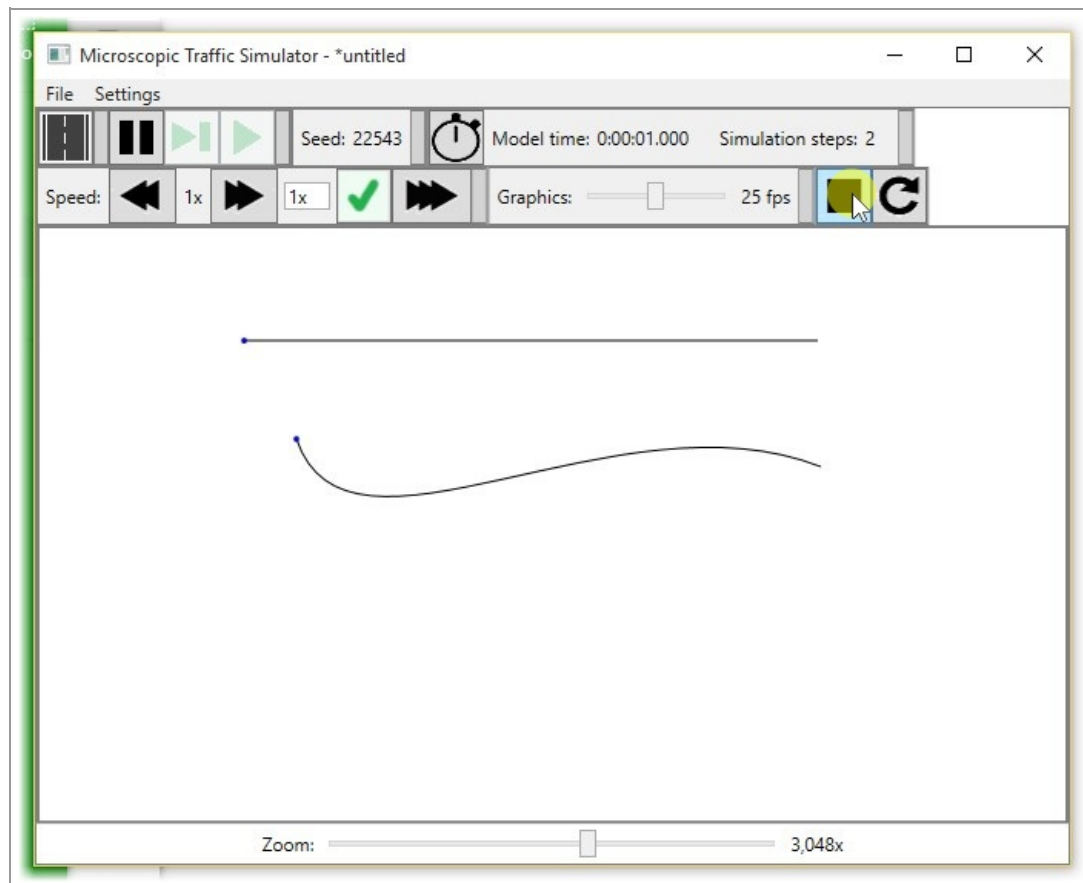
As it is shown on the picture it has been assigned a new seed value to the simulation.

## Simulation seed



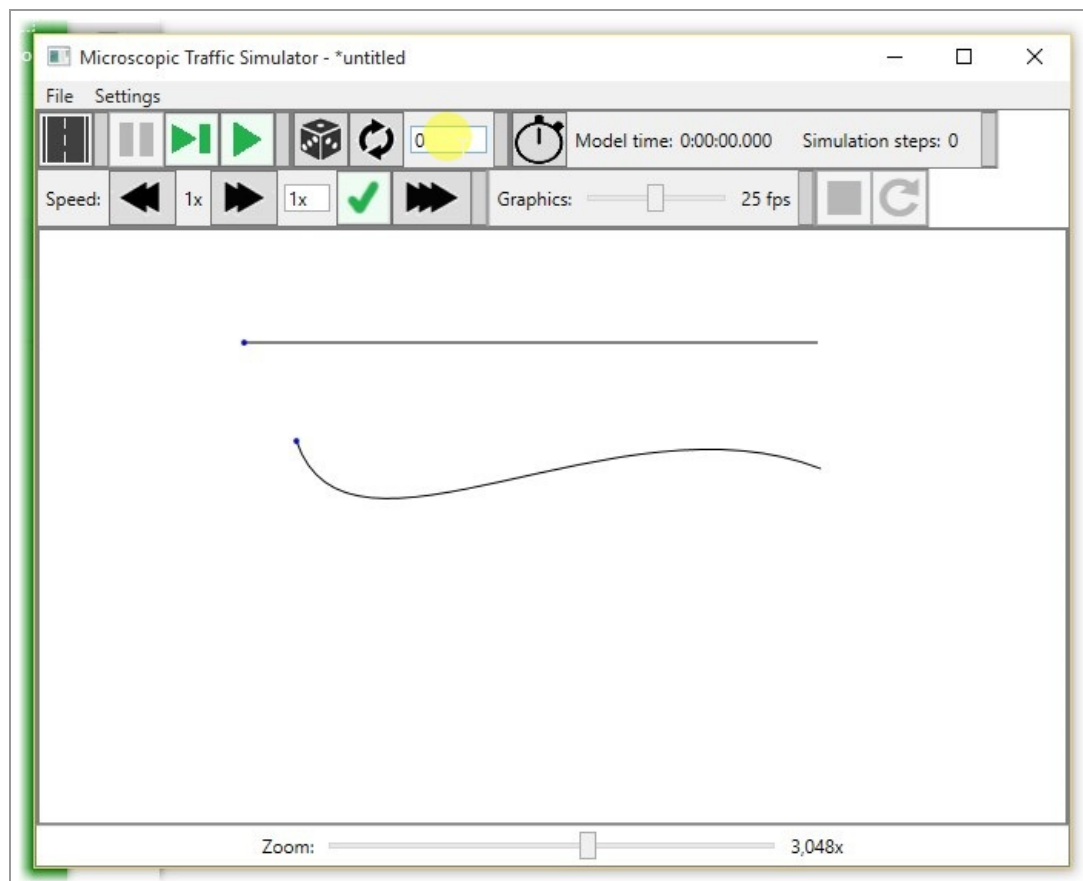
It is possible to set the seed value for the next simulation same as the previous simulation by clicking the appropriate icon as it is shown on the picture

## Simulation seed



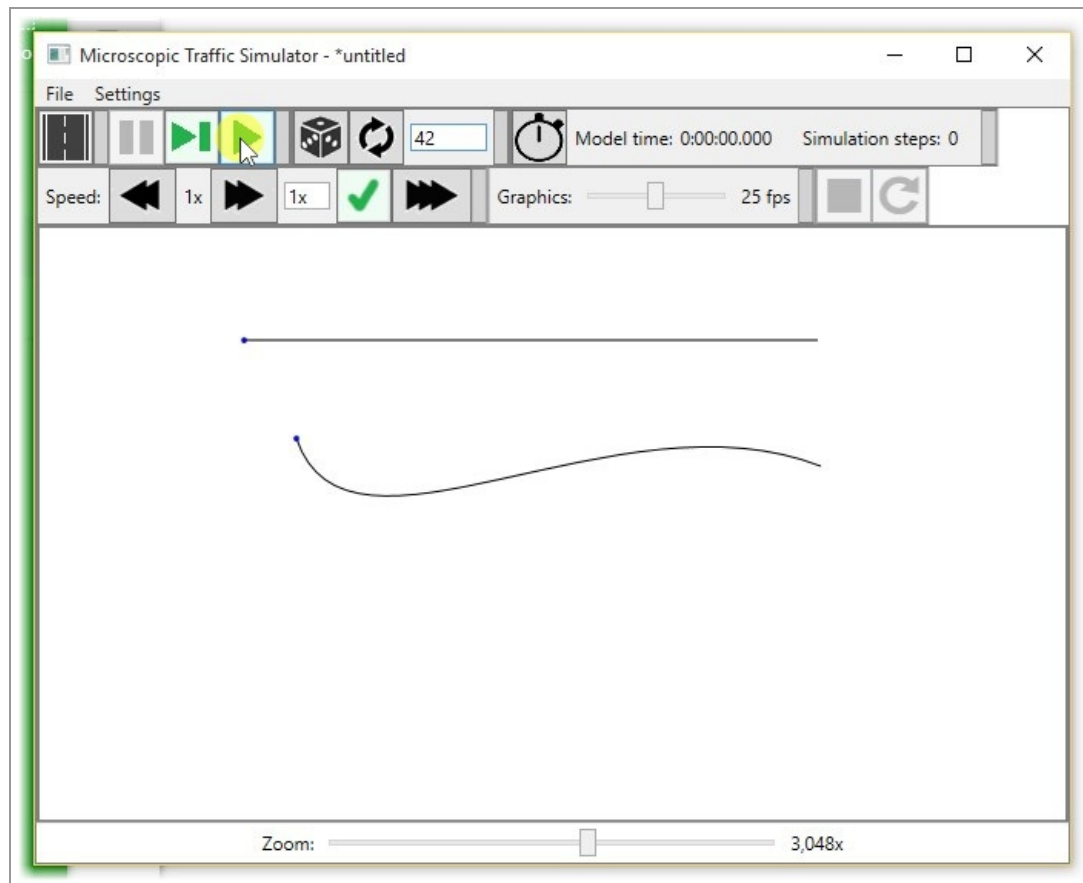
The new simulation has the same seed as the previous simulation.

## Simulation seed



The seed can be set manually by unchecking both icons controlling generating seeds. Then the textbox is shown.

## Simulation seed



Any integer value can be set as seed.