User Guide

Brief description

The user guide aims to provide a first insight and quick hands-on experience with the truck platooning simulation platform. Two demos, integrating the proposed platform with PTV Vissim, have been provided. PTV Vissim is utilized in these demos to facilitate visualization.

Requirements

To run the demos, ensure that the PTV Vissim software and a valid Vissim license are installed on your computer with the Windows operating system.

Vissim download

Go to this website https://cgi.ptvgroup.com/visionSetups/en/ to download the Vissim. Please note that only the 2023 versions of Vissim can be downloaded, as shown in follow:

| 2024.00-05	64 bit	PTV Vissim	Setup	Download (exe | 1191 MB | 2024-02-27)
2024.00-05		PTV Vissim Kernel (Linux) Readme Document	Document	Download (pdf | 54 KB | 2024-02-27)
2024.00-05	64 bit	PTV Vissim Kernel (Windows)	Setup	Download (exe | 151 MB | 2024-02-27)
2024.00-05	64 bit	PTV Vissim Kernel (Linux)	Setup	Download (txz | 38 MB | 2024-02-27)
2023		Installation Manual	Document	Download (pdf | 1168 KB | 2022-07-22)
2023.00-13		Release Notes	Document	Download (pdf | 267 KB | 2024-02-16)
2023.00-13	64 bit	PTV Vissim	Setup	Download (exe | 1217 MB | 2024-02-15)
2023	64 bit	Service Packs	Updates	Go to Update Packages
2023.00-13		PTV Vissim Kernel (Linux) Readme Document	Document	Download (pdf | 54 KB | 2024-02-15)
2023.00-13	64 bit	PTV Vissim Kernel (Windows)	Setup	Download (exe | 155 MB | 2024-02-15)
2023.00-13	64 bit	PTV Vissim Kernel (Linux)	Setup	Download (txz | 39 MB | 2024-02-15)

Vissim license

An academic license is provided by this research team. The license supports the version of Vissim 2023. The user can configure the license by following these steps:

1. After installing Vissim, search for 'CodeMeter Control Center' in the windows search bar and open it;
2. Click on 'WebAdmin' and open the 'CodeMeter WebAdmin' website;
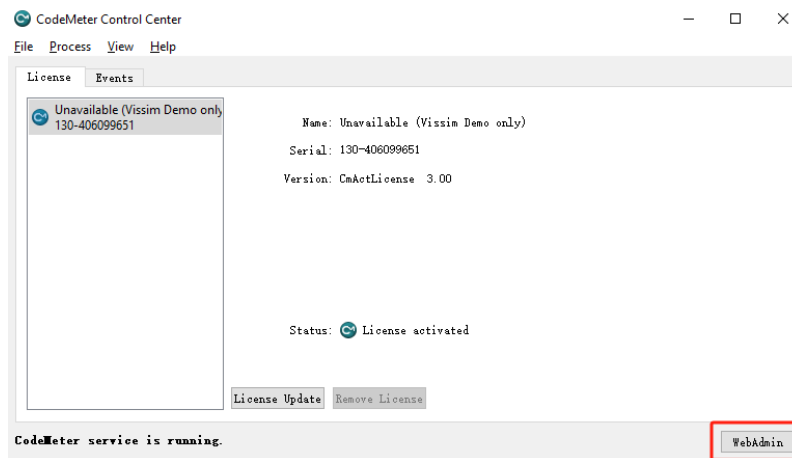
3. Add the new server ip: click on 'Configuration -- Server Search List -- add new Server 111.229.113.170'. We recommend removing automatic server search (255.255.255.255), then click 'Apply' to save the configuration;
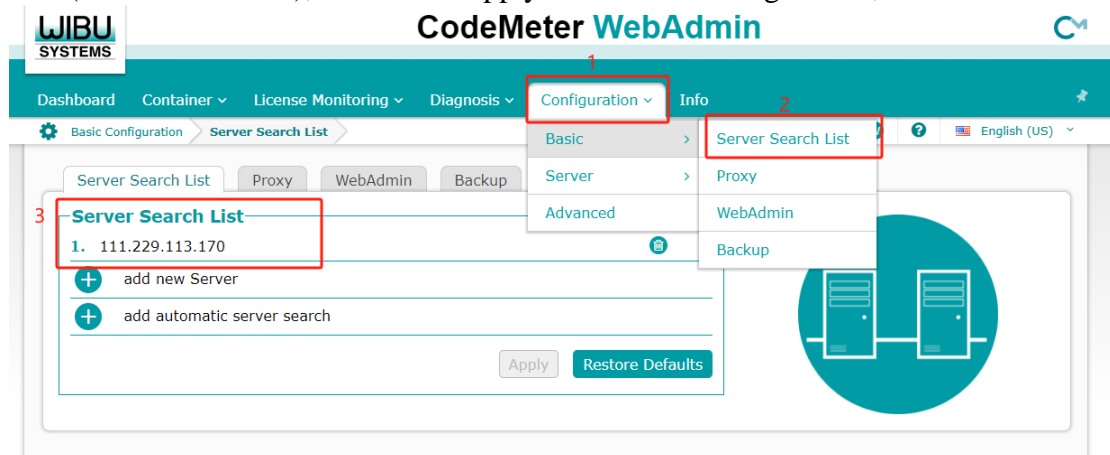
4. Open the vissim 2022, and choose the 'Select available license';
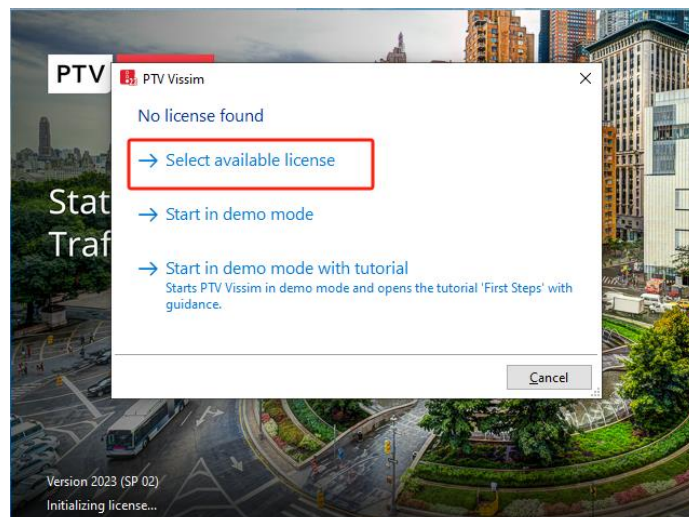
5. In the subsequent dialog box, click the magnifying glass icon to search for servers. After a moment, a server with the IP address 111.229.113.170 will appear in the dialog box. Select it and click 'Start'.
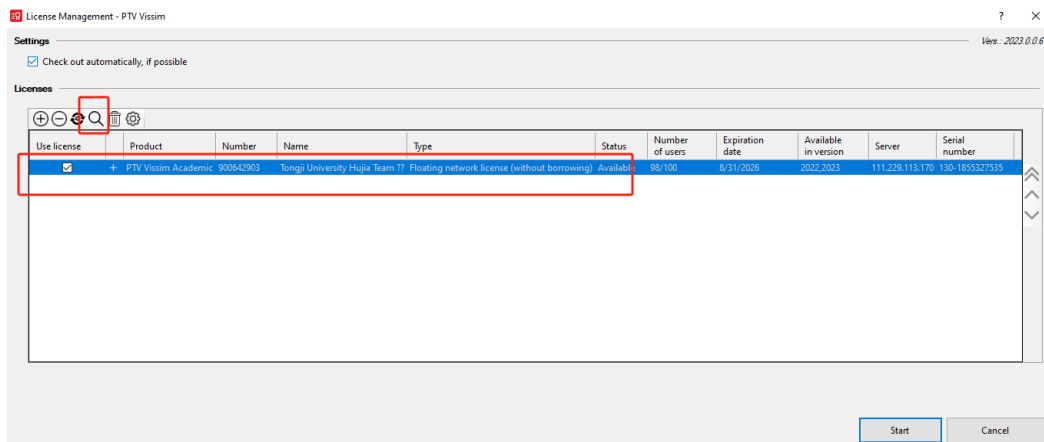
Demo 1: Single-platoon lane-changing with background traffic

Scenario description

A single-platoon is generated at the beginning of on-ramp after five-minute warming-up simulation. It merges onto the mainline and changes lanes to the platoon dedicated lane. As the platoon approaches the off-ramp, it changes lanes to exit. The platoon is with the background traffic throughout the simulation. The road network is as follows:
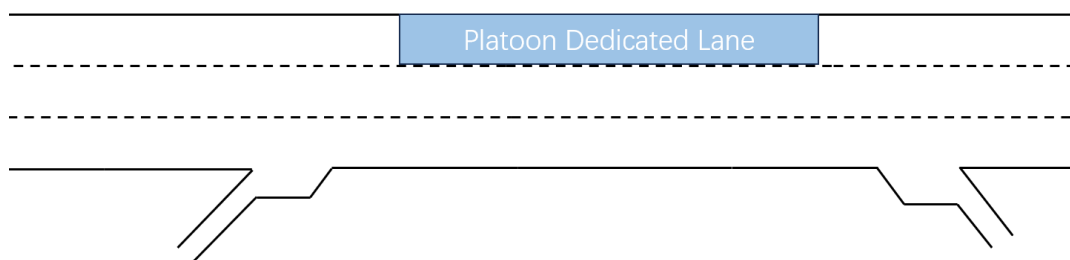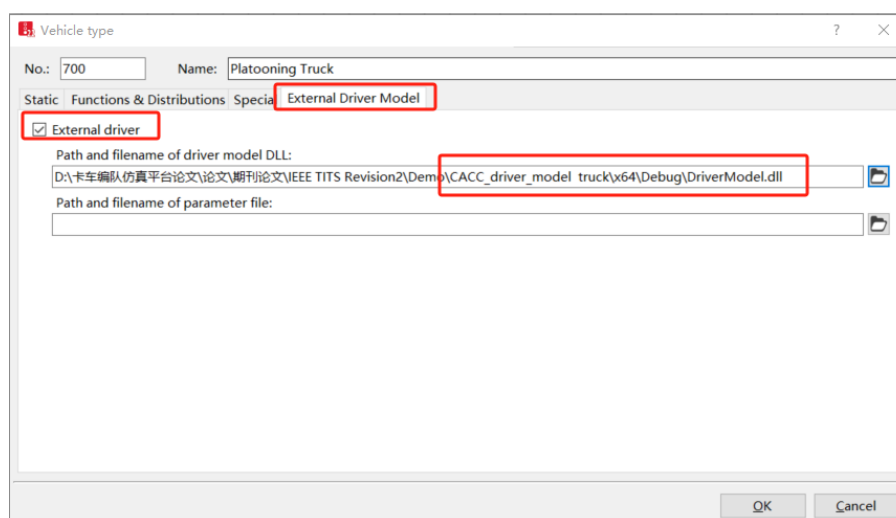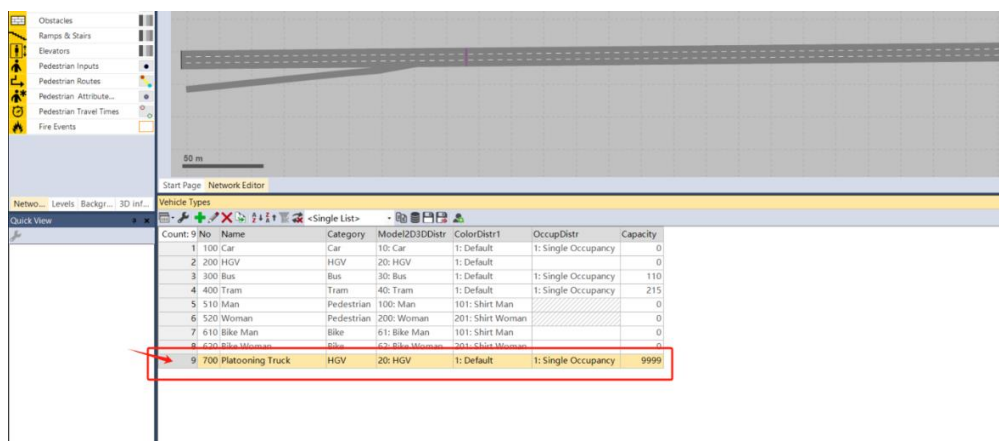

Quick start

1. Download the whole folder "Demo1 single-platoon lane-changing with background traffic" and the whole folder "CACC_driver_model truck";
2. Open the 'Demo1 single-platoon lane-changing with background traffic\ demo1_platoon_lane_changing.inpx';
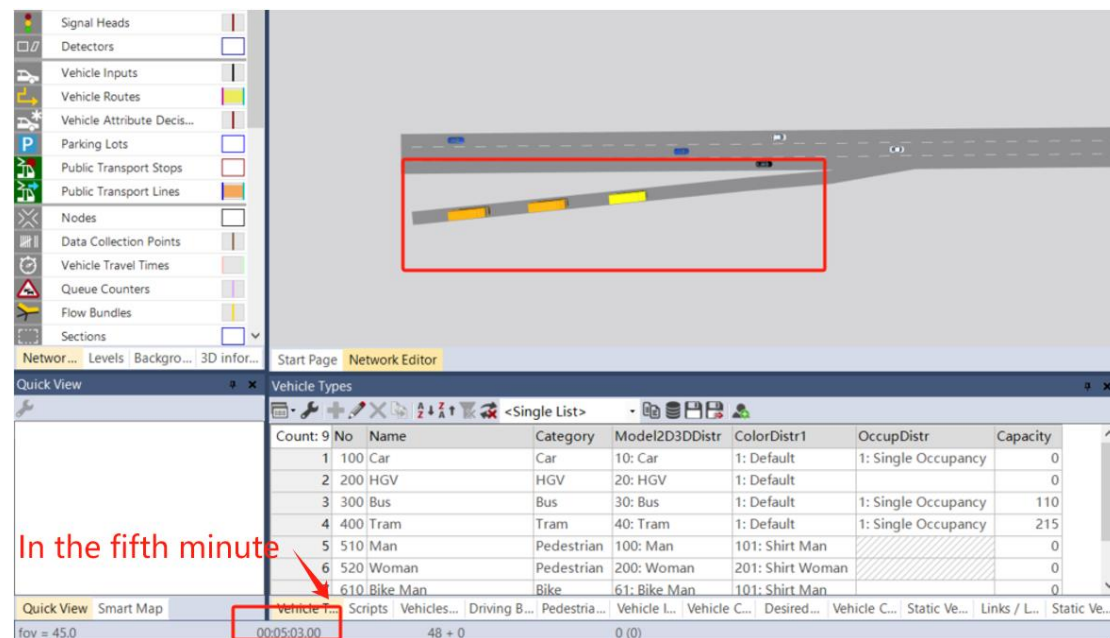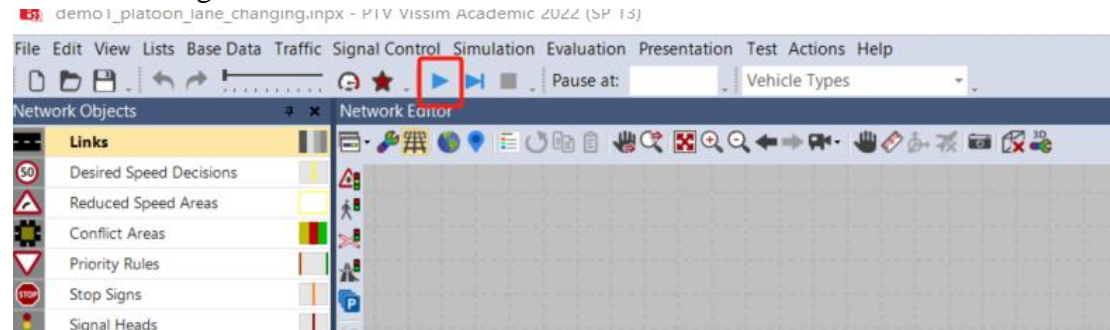
3. From the menu bar to choose 'Base Data – Vehicle Types';
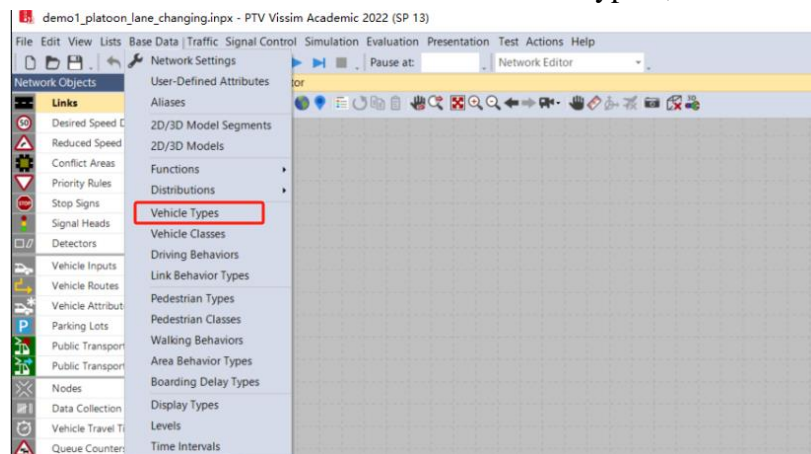
4. As shown in the following figures, in the vehicle types list, double click the 'Platooning Truck' bar to open the dialog box. Select the external driver model, and import the **DriverModel.dll** from 'CACC_driver_model truck\x64\Debug\' directory or 'CACC_driver_model truck\x64\Release\' directory. The DriverModel.dll is the library of truck platooning system, including truck platooning management and truck control modules;

5. Run the simulation. The truck platoon will be generated on the on-ramp **after five-minute warming-up simulation**, as shown in the following figure. Users can observe the lane-changing behavior of the truck platoon and its interaction with background traffic in this demo.

Demo 2: Multiple-platoon cruising with background traffic

Scenario description

Multiple truck platoons cruise on the freeway. The platoons travel amongst background traffic, as shown in the following figure.

Quick start

1. Download the whole folder "Demo2 multiple-platoon cruising with background traffic" and the whole folder "CACC_driver_model truck";
2. Open the 'Demo2 multiple-platoon cruising with background traffic\ demo2_multiple_platoon_cruising.inpx';
3. From the menu bar to choose 'Base Data – Vehicle Types';
4. In the vehicle types list, double click the 'Platooning Truck' bar to open the dialog box. Select the external driver model, and import the **DriverModel.dll** from 'CACC_driver_model truck\x64\Debug\' directory or 'CACC_driver_model truck\x64\Release\' directory.
5. Run the simulation. Trucks will be generated at the beginning of the freeway. Users can observe platoon maneuvers such as formation and splitting in this demo.