

# PTV Vissim Development for Automotive



Kelvin Ng  
Principal BDM, PTV Group

[kelvin.ng@ptvgroup.com](mailto:kelvin.ng@ptvgroup.com)  
Kakao Talk ID: ngyilongkelvin

13 Sep 2023  
Jeju-do, Korea



Association for Standardization of  
Automation and Measuring Systems

# ABOUT KELVIN NG

10+ years BD & partnerships experience in ride-hailing, active mobility, & bus-sharing tech companies



**PTV | GROUP**

Principal BDM  
ASEAN+



**CONNECT WITH ME**

✉ [kelvin.ng@ptvgroup.com](mailto:kelvin.ng@ptvgroup.com)  
**in** <https://sg.linkedin.com/in/ngyilongkelvin>

**PTV | GROUP**

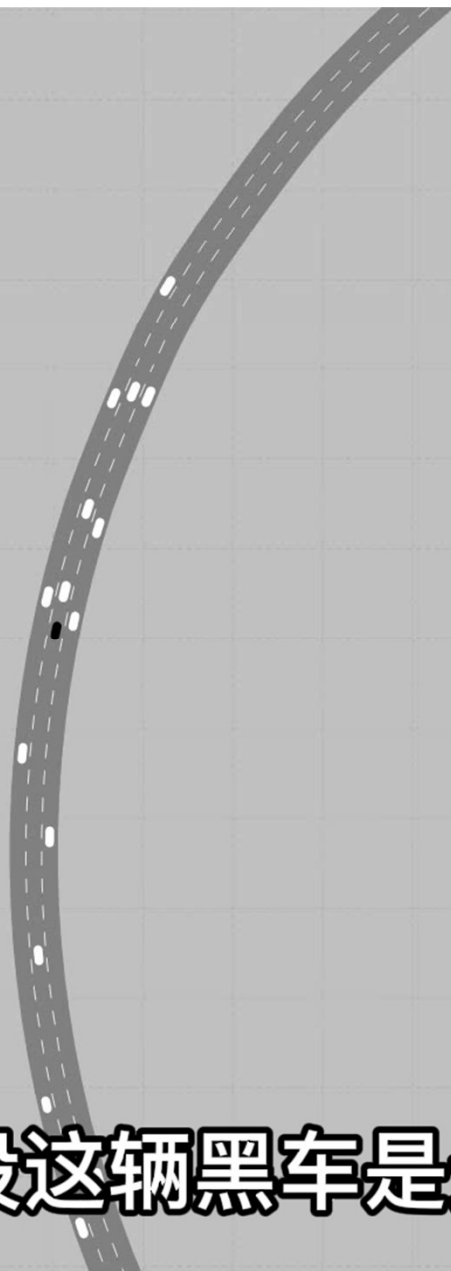




上海内环外圈吴中路上匝道

2023年5月24日

2023/05/24 17:49:56



**注意看，我们假设这辆黑车是无人驾驶车**

# EASY DRIVING BEHAVIOUR SET-UP

## Enrich Your Testing & Simulations with Realistic Traffic Conditions

- Virtual test drives need a realistic traffic environment for the system under test (SuT)
- Automotive engineers need an easy way to create and calibrate the testing environment (e.g. from a comfort-oriented to an aggressive traffic environment to challenge the SuT)
- Easy creation and calibration of driving behaviour and traffic environment through pre-defined parameters and selection of conditions

The screenshot shows the 'Driving Behavior' software window. It has a title bar with a red icon, a question mark, and a close button. Below the title bar, there are fields for 'No.: 1' and 'Name: Innerorts (motorisiert)'. A tabbed interface shows 'Following' as the active tab, with other tabs including 'Car following model', 'Lane Change', 'Lateral', 'Signal Control', 'Autonomous Driving', 'Driver Errors', and 'Meso'. Below the tabs, a dropdown menu shows 'Wiedemann 99'. The main area is divided into two columns of parameters with input fields:

Model parameters	
CC0 (Standstill distance):	1,50 m
CC1 (Gap time distribution):	2: 0,9 s
CC2 ('Following' distance oscillation):	4,00 m
CC3 (Threshold for entering 'Following'):	-8,00
CC4 (Negative speed difference):	-0,35
CC5 (Positive speed difference):	0,35
CC6 (Distance dependency of oscillation):	11,44
CC7 (Oscillation acceleration):	0,25 m/s <sup>2</sup>
CC8 (Acceleration from standstill):	3,50 m/s <sup>2</sup>
CC9 (Acceleration at 80 km/h):	1,50 m/s <sup>2</sup>

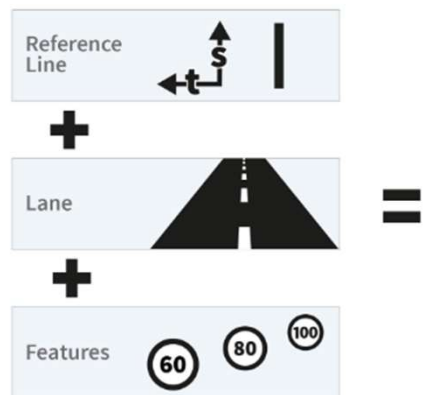
Below the parameters, there is a section titled 'Following behavior depending on the vehicle class of the leading vehicle:' with a table:

Count: 0	VehClass	W74ax	W74bxAdd	W74bxMult	W99cc0	W99cc1Distr	IncrsAccel

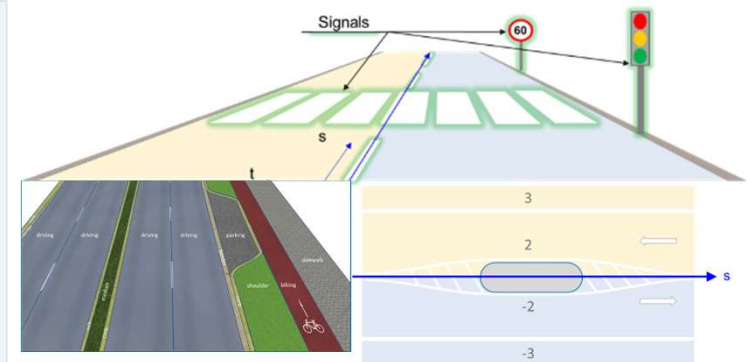
# IMPROVED OPENDRIVE SUPPORT

## Ease-of-use & Integration in your Toolchain

- Facilitate the set-up of co-simulation through re-use of existing network data
- Import of OpenDrive v1.8 networks (& older) for use in PTV Vissim simulations



Elements of ASAM OpenDRIVE



[<https://www.asam.net/standards/detail/opendrive/>]

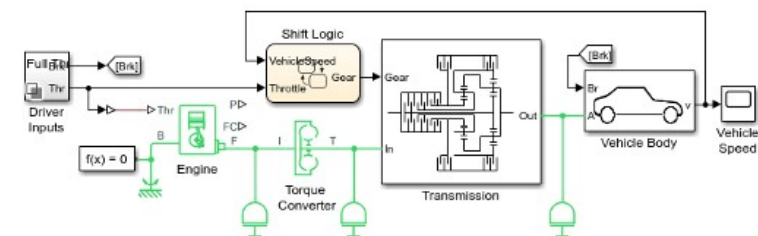
# SUPPORT FOR XIL SIMULATIONS

## More Options for Testing & Development

- The test of models (MiL), software (SiL), components or full vehicles (HiL) in-the-loop with a simulation environment needs high calculation frequency
- We will provide better support for XiL testing in new features & release updates (model, software, components, vehicle, etc.)
- Vissim interface provides interpolation of results >1,000 Hz (1 kHz)



[<https://www.fast.kit.edu/lff/4667.php>]



[<https://de.mathworks.com/help/sdl/ug/about-the-complete-vehicle-model.html>]



# UPDATED 3D VEHICLE MODELS





# INITIAL TARGET USE-CASES



## Target Audience:

### ■ Hardware-in-the-loop (HiL) or Model-in-the-loop (MiL) testing for:

- Component validation
- Powertrain development
- Driving algorithm development

Powertrain  
Departments

### ■ Co-simulation or Scenario Creation for:

- Development of ADAS functionalities
- Testing and validation of functional safety
- Multiple scenario mining

ADAS / AV Software  
Departments

# Our Customers

## Automotive OEMs



## Component Makers



## Autonomous Vehicles



## Research Institutions



Please scan QR to provide  
feedback on developments

Thank you for your attention! 😊

## Feedback for PTV Vissim Development







# CLIENT SURVEY



## Questions to Collect Customer Feedback for Roadmap Items:

- Do you want to have HiL Simulation of components or full vehicle with a simulated traffic environment?
- Do you build up or use scenario databases?
- How do you create new scenarios for the database:
  - Real-world driving
  - Abstract test-case definition.
  - Scenario mining in simulation
  - Acquire scenarios from third party
- Do you use a framework to batch run a multitude of scenarios or variations?
- Do you want to add micro agent behavior intelligence to the scenario replay?
- Do you want to apply long test drives in large simulation environments, e.g. for range evaluation?
- Do you want to couple Simulink models or vehicle with traffic simulation?
- Do you want to use observed trajectory data as input to set up or calibrate traffic scenes in simulation?
- Do your engineers or developers have C++ skills?