VSimRTI: Vehicle-2-X Simulation
Runtime Infrastructure

Conversion Guide (from VSimRTI 18.1 to 19.1)

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Abstract

The Vehicle-2-X Simulation Runtime Infrastructure (VSimRTI) enables the preparation and execution of Vehicle-2-X (V2X) simulations. It is a flexible system which simulates traffic flow dynamically. VSimRTI couples different simulators and thus allows the simulation of the various aspects of intelligent transportation systems. The easy integration and exchangeability of simulators enables the utilization of the most relevant simulators for a realistic presentation of vehicle traffic, emissions, wireless communication and the execution of V2X applications.

The developer alliance

The developer alliance consists of Fraunhofer-Institut für Offene Kommunikationssysteme (FOKUS), Daimler Center for Automotive Information Technology Innovations (DCAITI) and Automotive Services and Communication Technologies (ASCT).

Contact information

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VSimRTI: Smart Mobility Simulation

http://www.dcaiti.tu-berlin.de/research/simulation

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1 Introduction

Over the time we made some major changes to how VSimRTI handles scenarios and applications. This made it necessary to upgrade your scenario so it can be executed with current versions. Depending on how old your scenario is and what components of VSimRTI you are using, this may need quite some work. With VSimRTI 19.1, some minor changes have been made to the license management.

Please send a mail to our mailing list if you have further questions.

2 VSimRTI renaming and additional Mapping for VehicleParameters

2.1 When is this important?

If your applications have been implemented for VSimRTI 0.19.0 or lower and accessed the SpeedBehavior or LaneChangeBehavior of the VehicleParameters. We renamed SpeedBehavior to SpeedMode and laneChangeBehavior to laneChangeMode to be conform with their names in SUMO (see https://sumo.dlr.de/wiki/TraCI/Change_Vehicle_State#speed_mode_.280xb3.29 and https://sumo.dlr.de/wiki/TraCI/Change_Vehicle_State#lane_change_mode_.280xb6.29). Additionally you can now also set those two values in your mapping-configuration for applications.

2.2 What do I have to do now?

All your applications that access SpeedBehavior or LaneChangeBehavior in some way have to have their class- and method-calls changed to the corresponding SpeedMode or LaneChangeMode methods or classes.

Below you will find an example of how to set both values using the mapping-configuration for applications. Additionally table 1 lists all valid values.

```
"prototypes": [
    {
        "name": "Car",
        "accel": 2.6,
        "decel": 4.5,
        "emergencyDecel": 6.0,
        "length": 5.00,
        "maxSpeed": 70.0,
        "minGap": 2.5,
        "sigma": 0.5,
        "tau": 1,
        "speedFactor": 1.0,
        "speedDeviation": 0,
        "speedMode": "DEFAULT",
        "laneChangeMode": "DEFAULT"
    },
    {
```

Listing 1: Example mapping of SpeedMode and LaneChangeMode in the Barnim-scenario
4 VSimRTI additional parameter emergencyDecel for Vehicles

3 VSimRTI Removal of getOperatingSystem().getVehicleType()

3.1 When is this important?

If your applications have been implemented for VSimRTI 0.19.0 or lower and used the function getOperatingSystem().getVehicleType(). This method has been removed and is replaced by the prior existing getOperatingSystem().getInitialVehicleType() to better reflect the actual functionality and reduce redundant code.

3.2 What do I have to do now?

Applications that contain calls of getOperatingSystem().getVehicleType() have to have those calls changed to getOperatingSystem().getInitialVehicleType().

4 VSimRTI additional parameter emergencyDecel for Vehicles

4.1 When is this important?

This version of VSimRTI now supports adding emergencyDecel to your applications mapping-files. This value is used by SUMO's car following model (see https://sumo.dlr.de/wiki/Definition_of_Vehicles,_Vehicle_Types,_and_Routes#Available_vType_Attributes). If you are interested in using this attribute, the following information will be of value to you.

4.2 What do I have to do now?

The following table shows the usage of the added parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>laneChangeMode</td>
<td>Choose the way vehicles will behave during lane changes. Accepted, predefined values: DEFAULT, OFF, CAUTIOUS, COOPERATIVE, AGGRESSIVE and PASSIVE.</td>
</tr>
<tr>
<td>speedMode</td>
<td>Choose the way vehicles will behave when accelerating and slowing down. Accepted, predefined values: DEFAULT, CAUTIOUS, NORMAL, AGGRESSIVE and ROWDY.</td>
</tr>
</tbody>
</table>

Table 1: Additional Parameters and their description
description

emergencyDecel  The maximal physically possible deceleration for the vehicle (in $m/s^2$). Default value = Default value of decel = 4.5 $m/s^2$

Table 2: Additional Parameters and their description

5 Changes regarding Cell2 configuration

5.1 When is this important?

A lot of our old documentation used to refer the configuration options `debugGeocasting` and `visualizeRegions`, those options were deprecated and have been removed from all example configurations.

5.2 What do I have to do now?

If you want you can remove `debugGeocasting` and `visualizeRegions` from your cell2-configurations, though nothing will break if you leave them there.

6 Changes regarding the `scenario-convert-Script`

6.1 When is this important?

There were a couple of improvements and changes for the `scenario-convert-Script`, though only few affect the way you can use the Script. The option `--export-routes` has been removed and now will always be called when using the `--db2sumo` option.

Furthermore we made changes to the `--xxx2vsimrti` options. All of those options will create a complete scenario with minimal configurations for a lot of the simulators available.

6.2 What do I have to do now?

If you were used to add this option manually you now don’t have to do that anymore. If you don’t want the files you can go ahead and delete them.
## List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
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<td>DCAITI</td>
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<td>SUMO</td>
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