

# Unveiling the Mystery of Traffic Congestion

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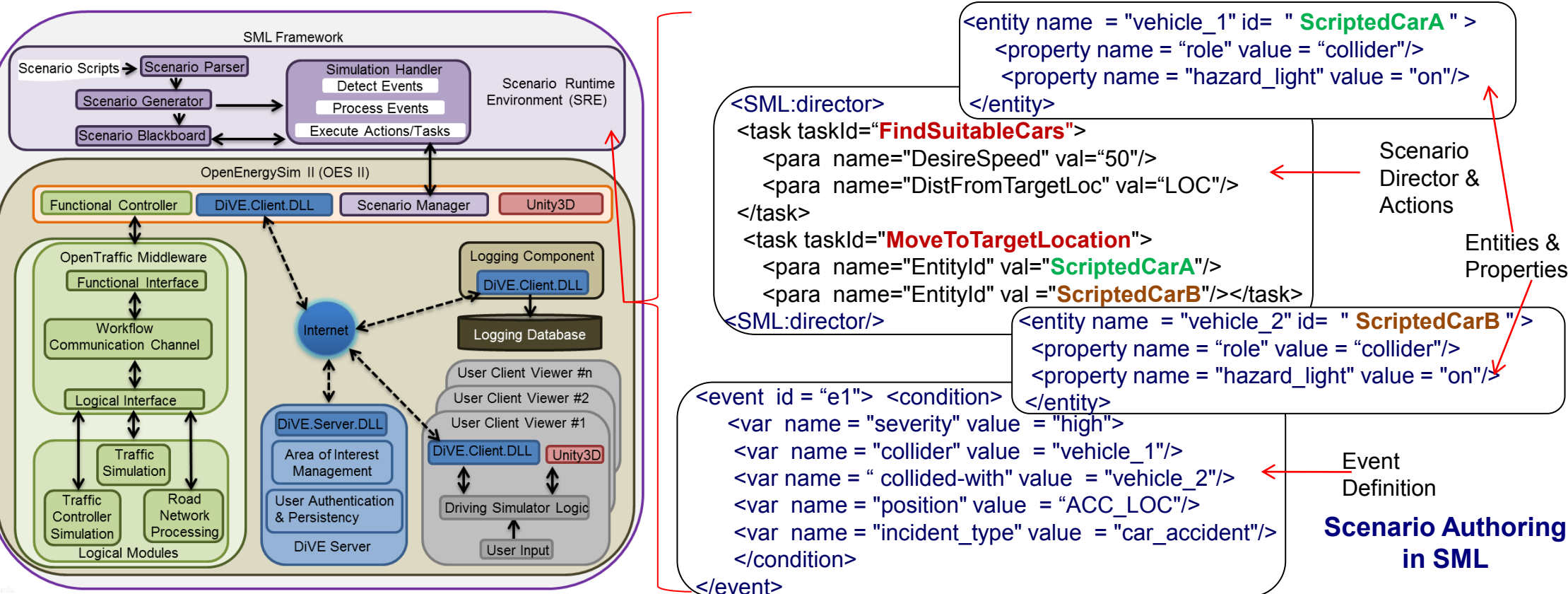
## Motivation

Traffic congestion is a big economic and environmental problem. Therefore, traffic engineers try to understand the causes of traffic congestion. However, there exists no effective method to understand the origin of traffic congestion at the microscopic level: Who is the magical "first driver" in traffic congestion? How does the slowing of the "first driver" propagate to the driving behavior of following cars?

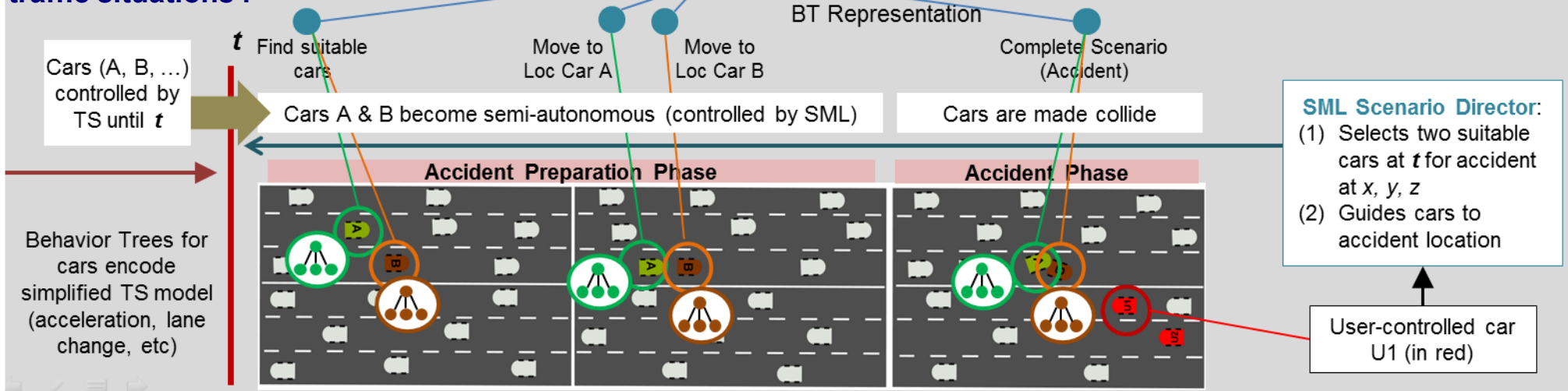
## Objective

Our objective is to develop the Scenario Framework that includes (1) the Scenario Markup Language (SML), a novel scripting language for specifying and orchestrating events in highly dynamic scenarios such as traffic scenarios, (2) technique to create reproducible traffic situations and this ensures the reproducibility of the drivers' experience, and (3) capabilities for driver behavioral data collection.

## SML (Scenario Markup Language) Framework Architecture



## Technique to create reproducible traffic situations :



## Multi User Driving Experiment in Traffic Congestion Scenarios

### Traffic Engineers' Objective

Study how drivers change their operational driving behavior (e.g. speed drops) at the accident site by collecting driver behavioral data.

### Computer Scientists' Objective

Investigate if the technique was able to reproduce the traffic scenario being tested for all subjects so that the same experimental condition prevails.

