

OPENSENARIO @ VOLVO CARS & PARTNERS



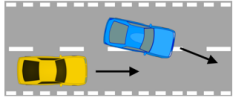
OpenSCENARIO workshop Sep 17 2018

emil.knabe@volvocars.com

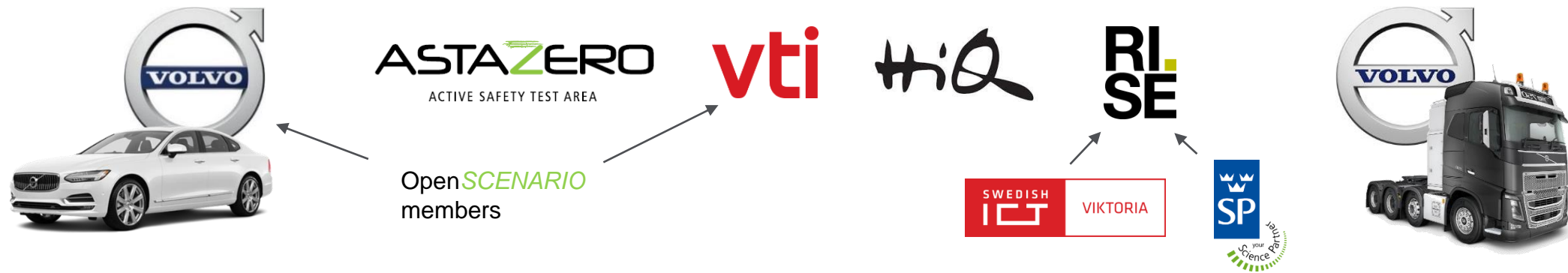
project leader / sw developer
complete electrical integration



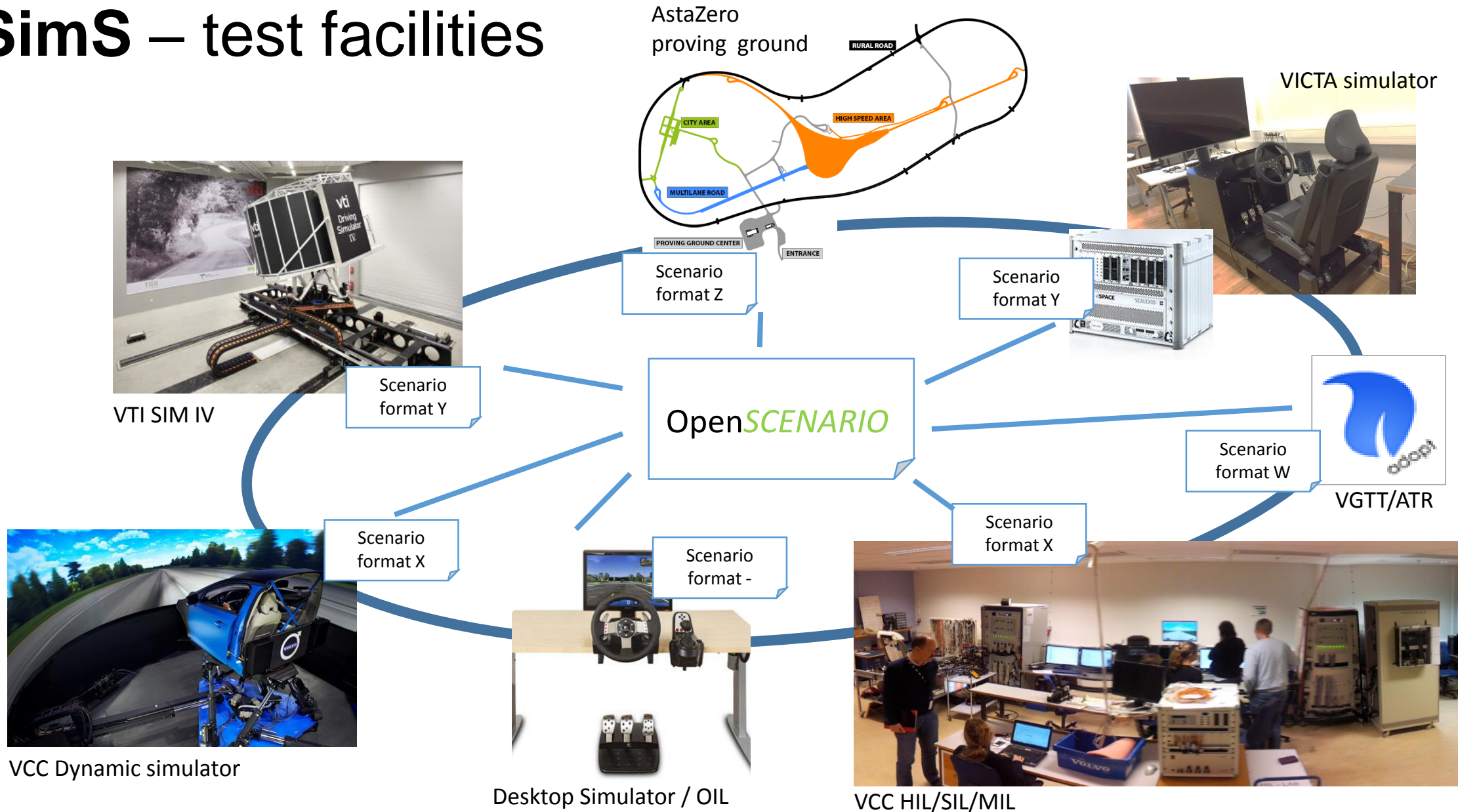
SIMULATION SCENARIOS



- Overall goals:
 - Portable tests including traffic scenarios
 - Common formats for environment models and traffic scenarios
- Time plan: March 2017 – Feb 2019
- Partners:



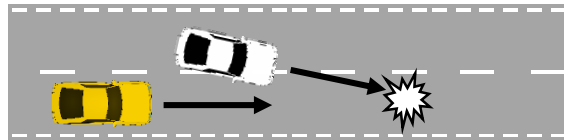
SimS – test facilities



SIMS PLAN

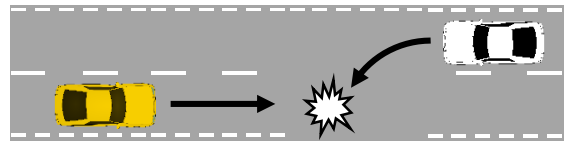


Select and define key scenarios



Cut-in

Cut-in followed by sudden brake



LTAP OD

Left Turn Across Path /
Opposite Direction

Formal descriptions

OpenSCENARIO descriptions

SW and tool development

Scenario engine SW module

Road modeling Tool chain

Adapt test environments



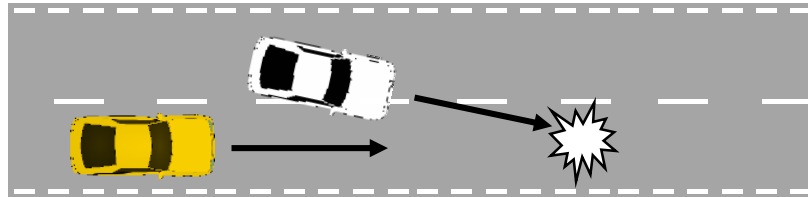
- Demos
- OpenSCENARIO evaluated
- Conclusions
- Open source?

Feasible to align test environments?

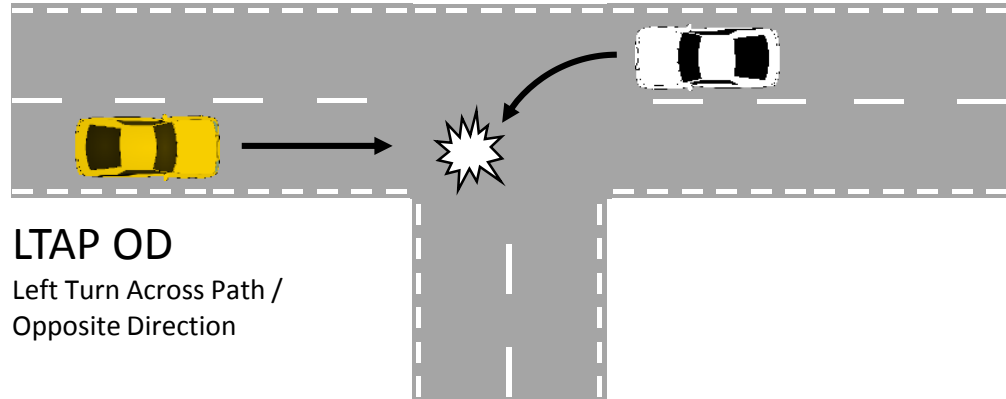
2017 Mar

2019 Feb

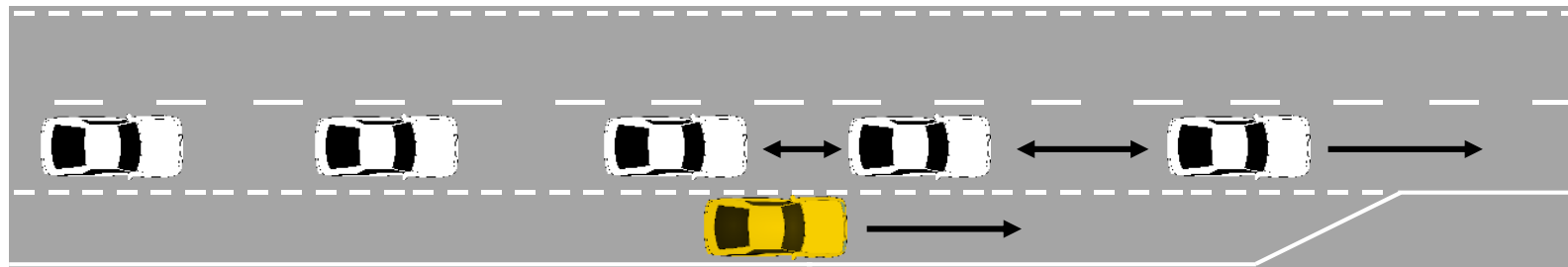
SIMS KEY SCENARIOS



Cut-in
Cut-in followed by sudden brake



LTAP OD
Left Turn Across Path /
Opposite Direction



Highway merge

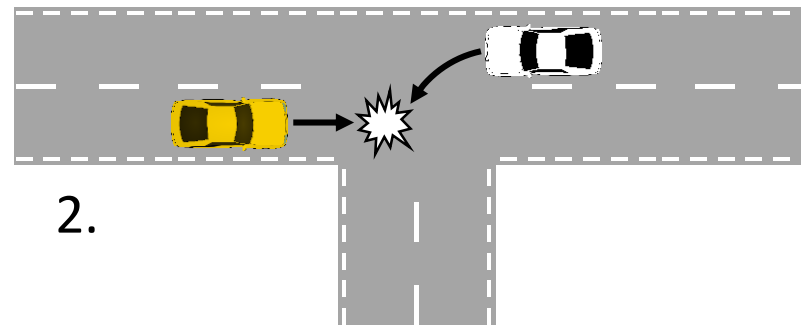
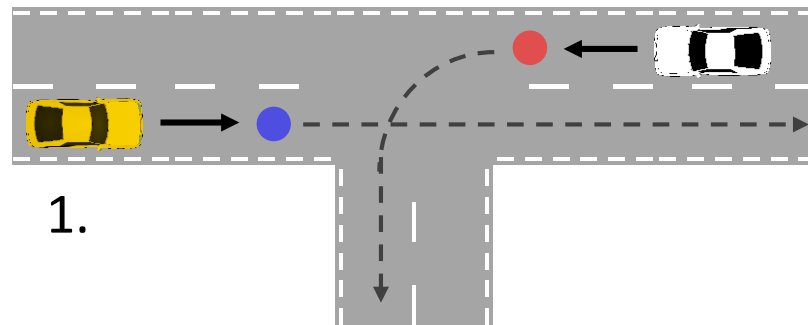
LTAP/OD



Left Turn Across Path / Opposite Direction

- variant where Ego going straight, target vehicle turning left

1. The white car arrives at the red point as the yellow car (Ego) arrives at the blue point
2. Then the white car continues along its route, causing risk for collision



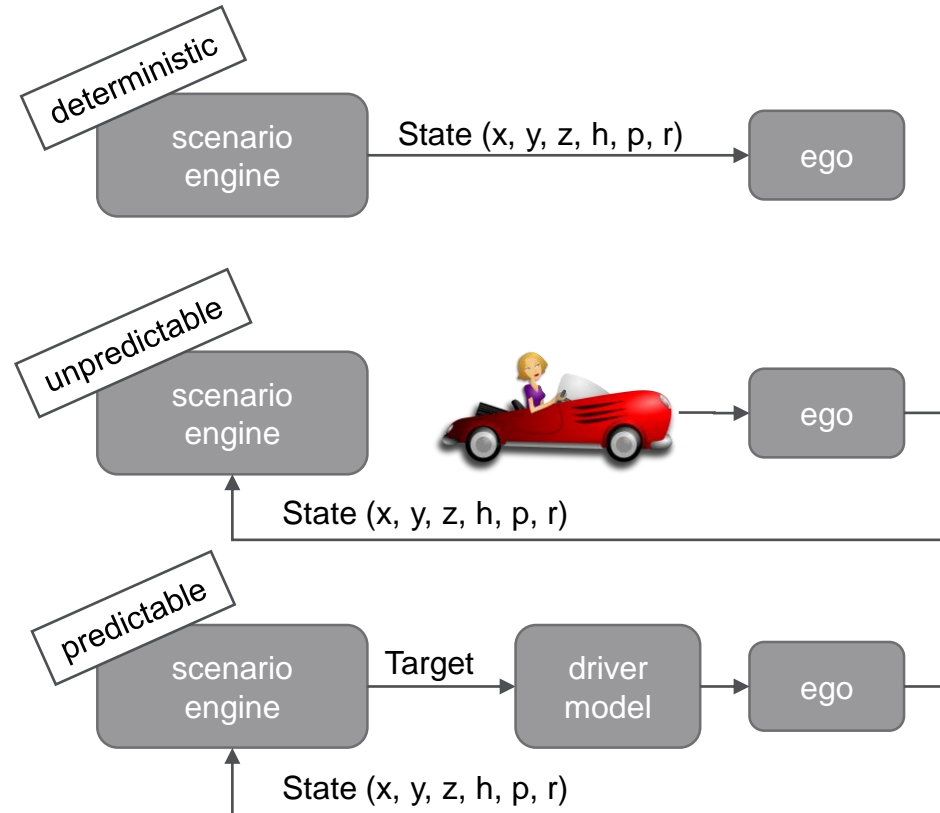
should also support externally controlled Ego vehicle, e.g. human in the loop

HIGH LEVEL USE CASES



Ego vehicle(s) (VUTs) is controlled either:

1. Completely by the scenario, i.e. no driver or vehicle dynamics
2. Completely by an external vehicle simulator, e.g. human in the loop, or AD
3. Partly by the scenario, e.g. steering guidance



USE CASES / NEEDS



Specify control mode

how to control external vehicles? (explicit, none or guide - see previous slide)
by actor attribute or a custom property

Synchronization

e.g. reach individual destinations simultaneously – like in the LTAP/OD scenario
proposed extension to the Meeting action

External triggers

e.g. trig an action when external vehicle activates turn signal

Multiple simultaneous actions

e.g. longitudinal (brake) and lateral (lane change)
dual maneuvers needed?