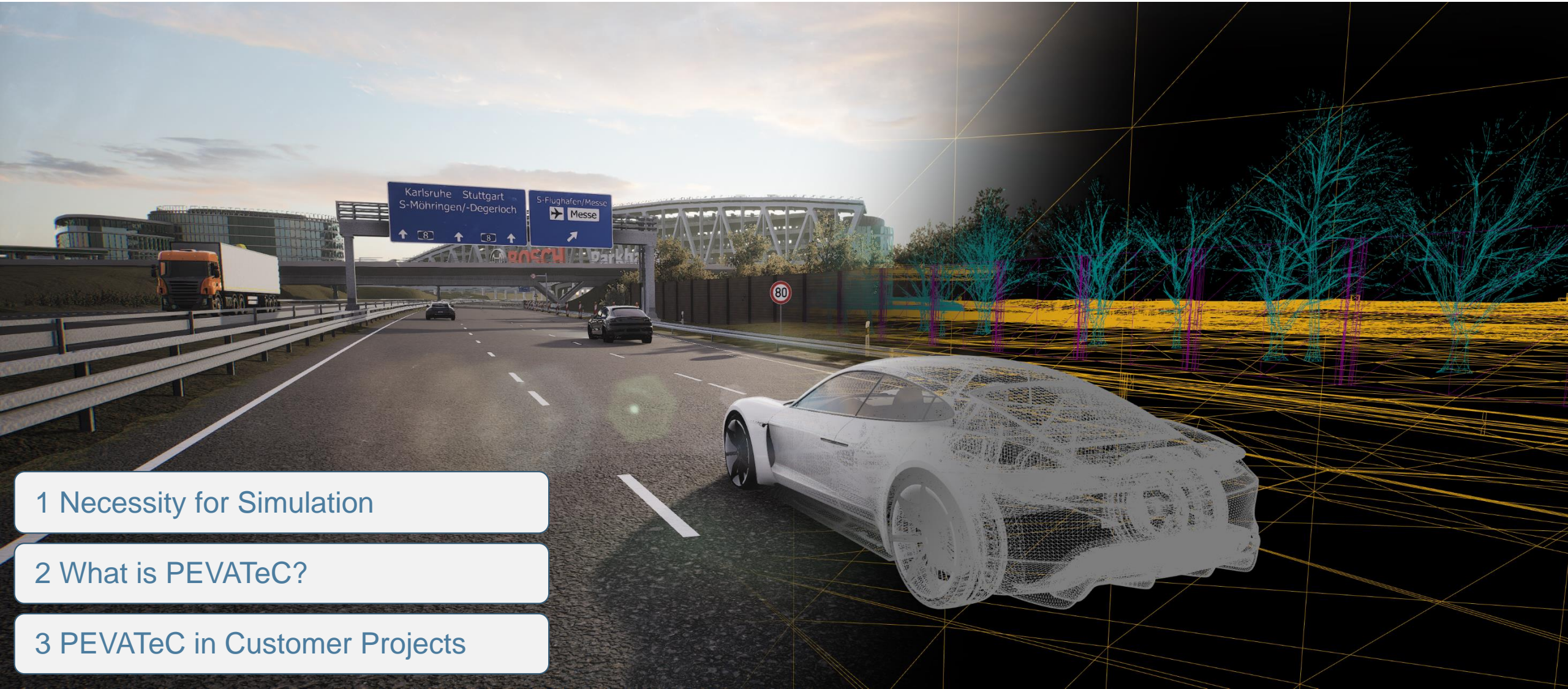




**PORSCHE**

# ADAS/AD virtual platform for end-to-end software development, testing and validation

## Porsche Engineering Virtual ADAS Testing Centre (PEVATeC)



1 Necessity for Simulation

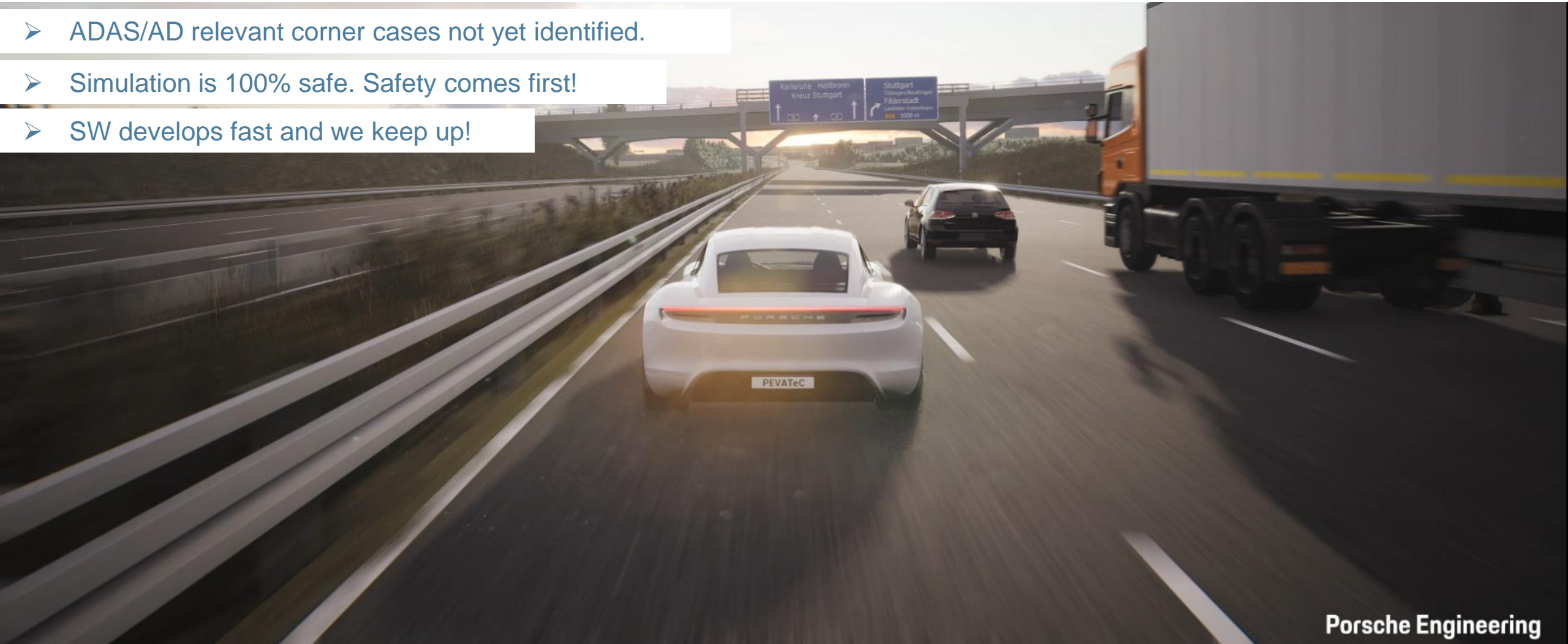
2 What is PEVATeC?

3 PEVATeC in Customer Projects

## 1. Necessity for Simulation

- ADAS/AD involves HW & SW providers from diverse disciplines.
- ADAS/AD relevant corner cases not yet identified.
- Simulation is 100% safe. Safety comes first!
- SW develops fast and we keep up!

**ADAS/AD is only possible with simulation**



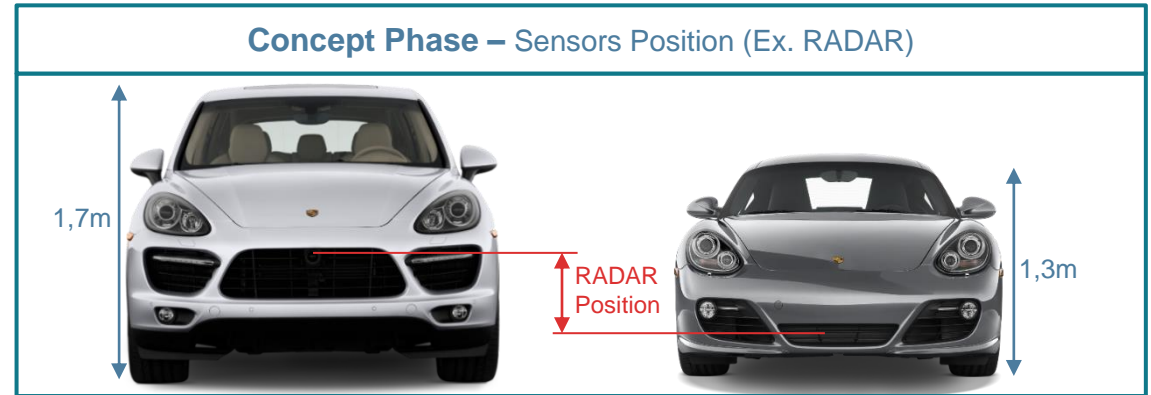
## 1. Necessity for Simulation

### Fatality rate reduction

Source	AD* = HD**	AD* = 0.8 x HD**
RAND	14.2B km	<b>17.7B</b> km
BMW		[240M , <b>11B</b> ] km

\* AD – Autonomous Driving

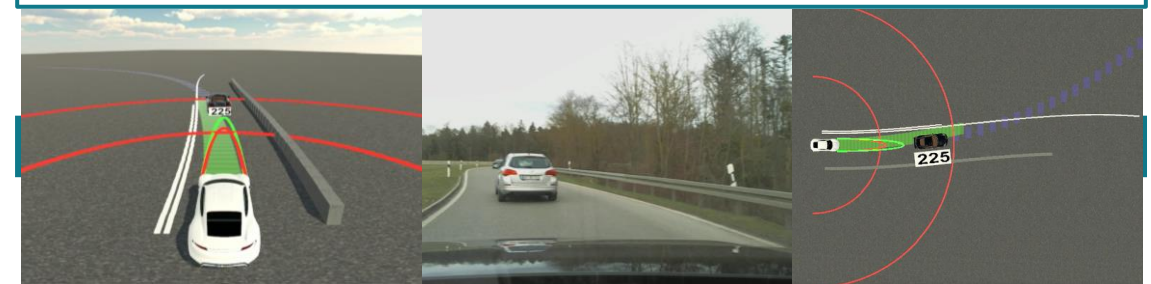
\*\*HD – Human Driver



### “Early” Development

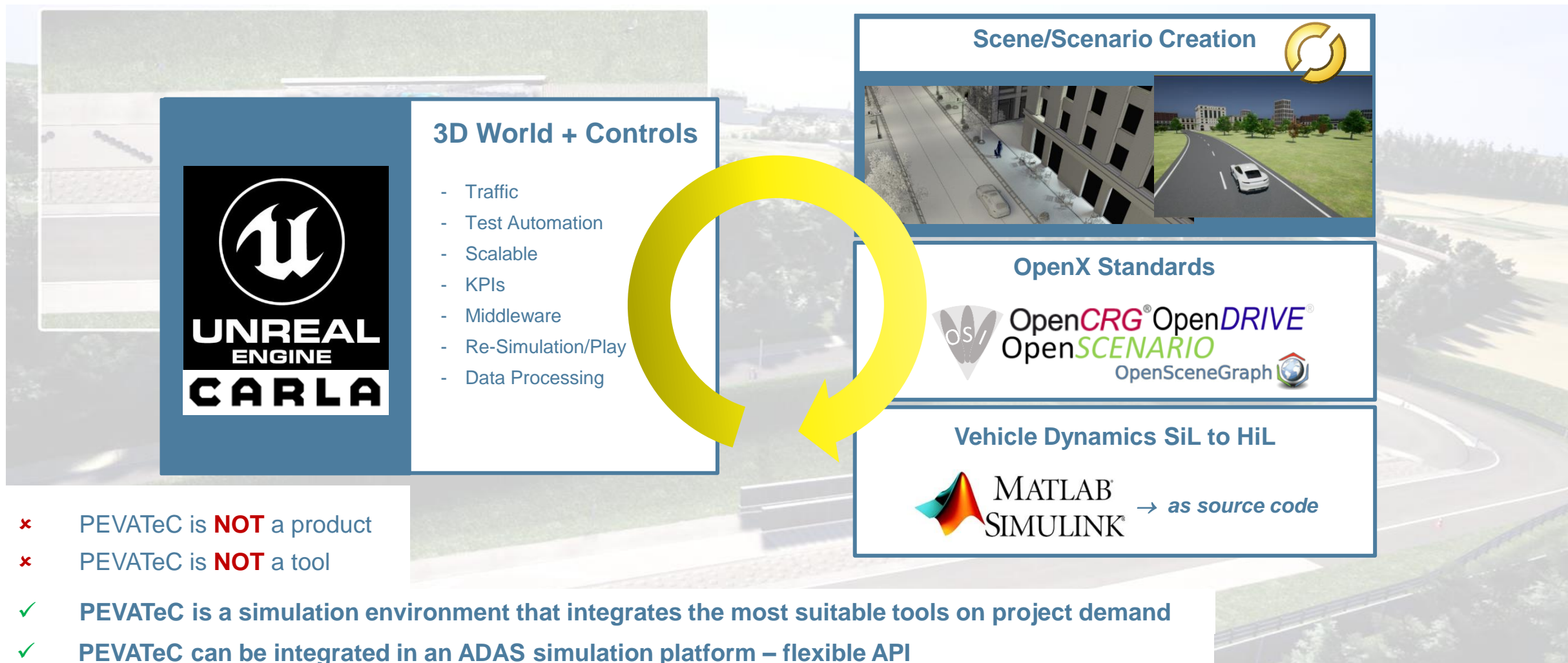


### Re-Simulation & Test Plan



## 1. PEVATeC Architecture & Tools

PEVATeC Simulation Environment



✗ PEVATeC is **NOT** a product

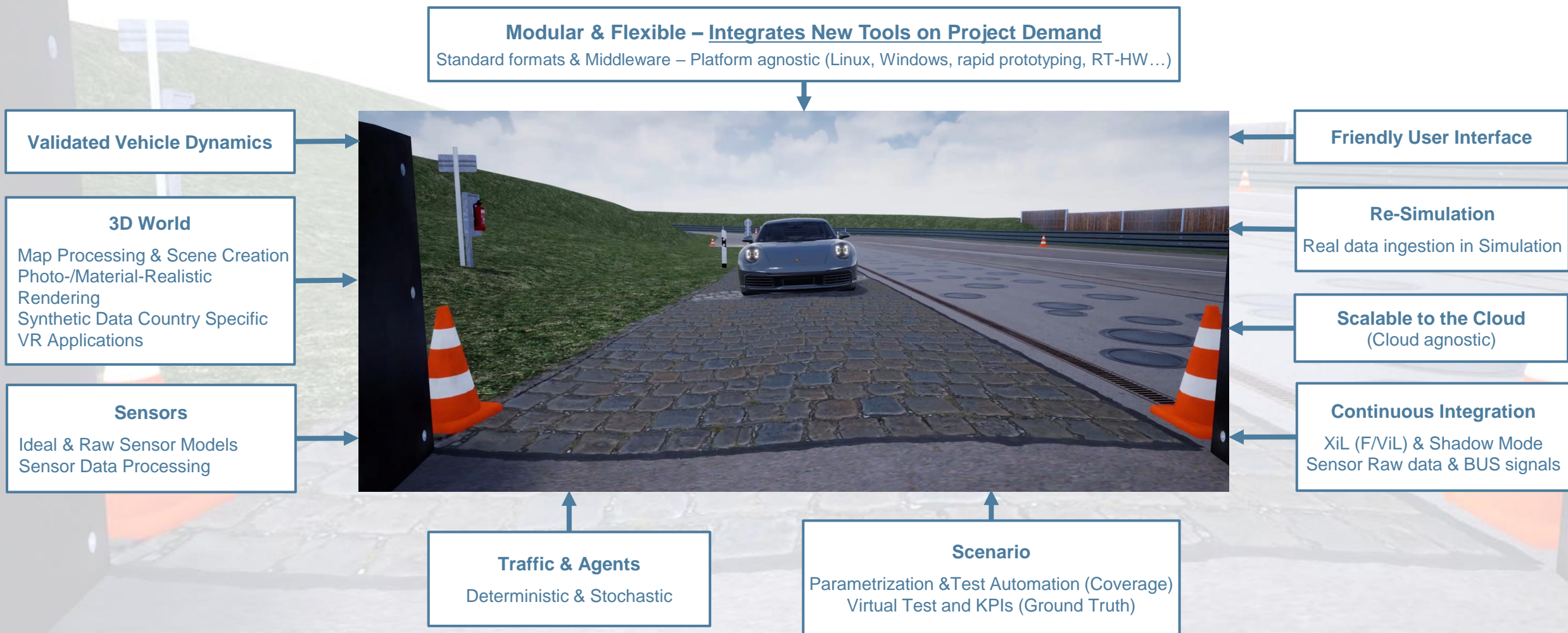
✗ PEVATeC is **NOT** a tool

✓ PEVATeC is a simulation environment that integrates the most suitable tools on project demand

✓ PEVATeC can be integrated in an ADAS simulation platform – flexible API

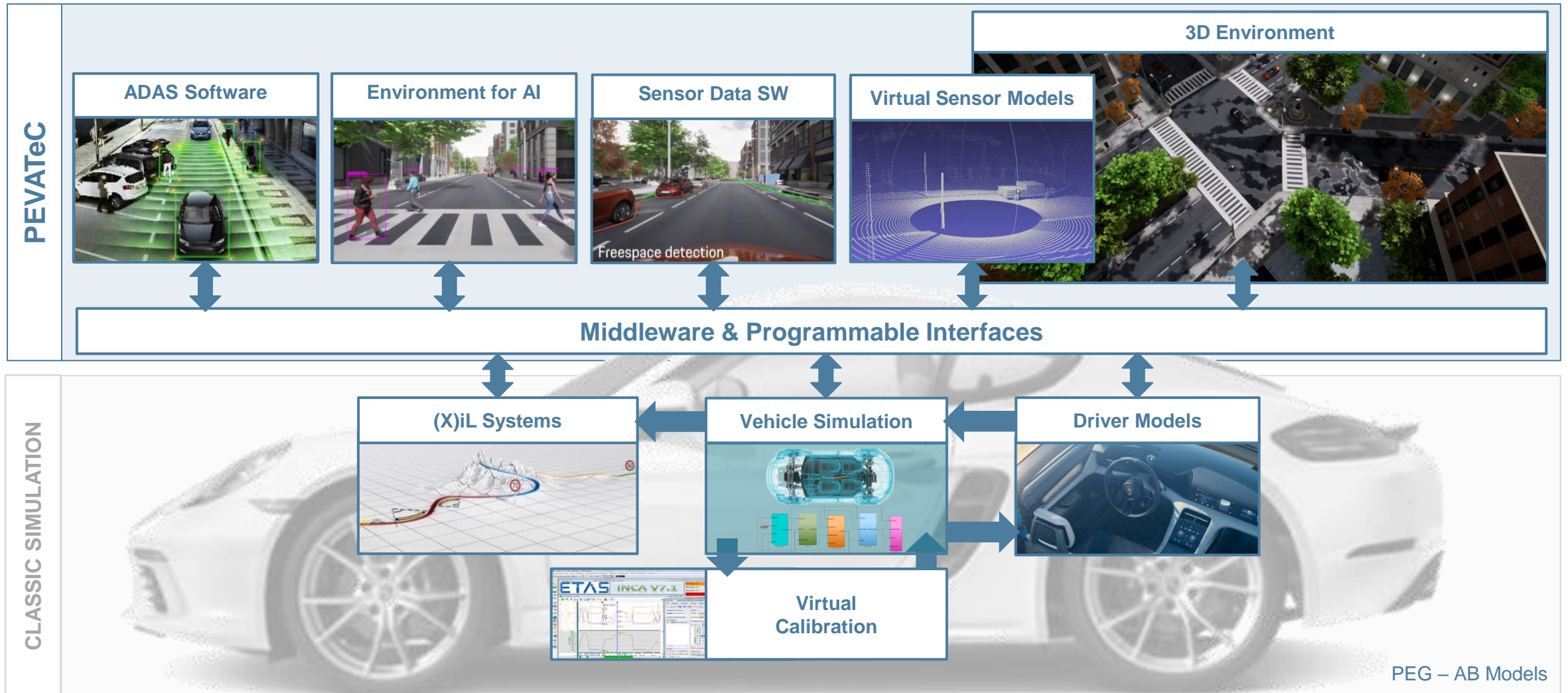
## 2. What is PEVATeC?

Simulation environment PEVATeC with modular architecture



## 2. What is PEVATeC?

Adaptive, Modular and Flexible Platform for ADAS/AD End-To-End Development

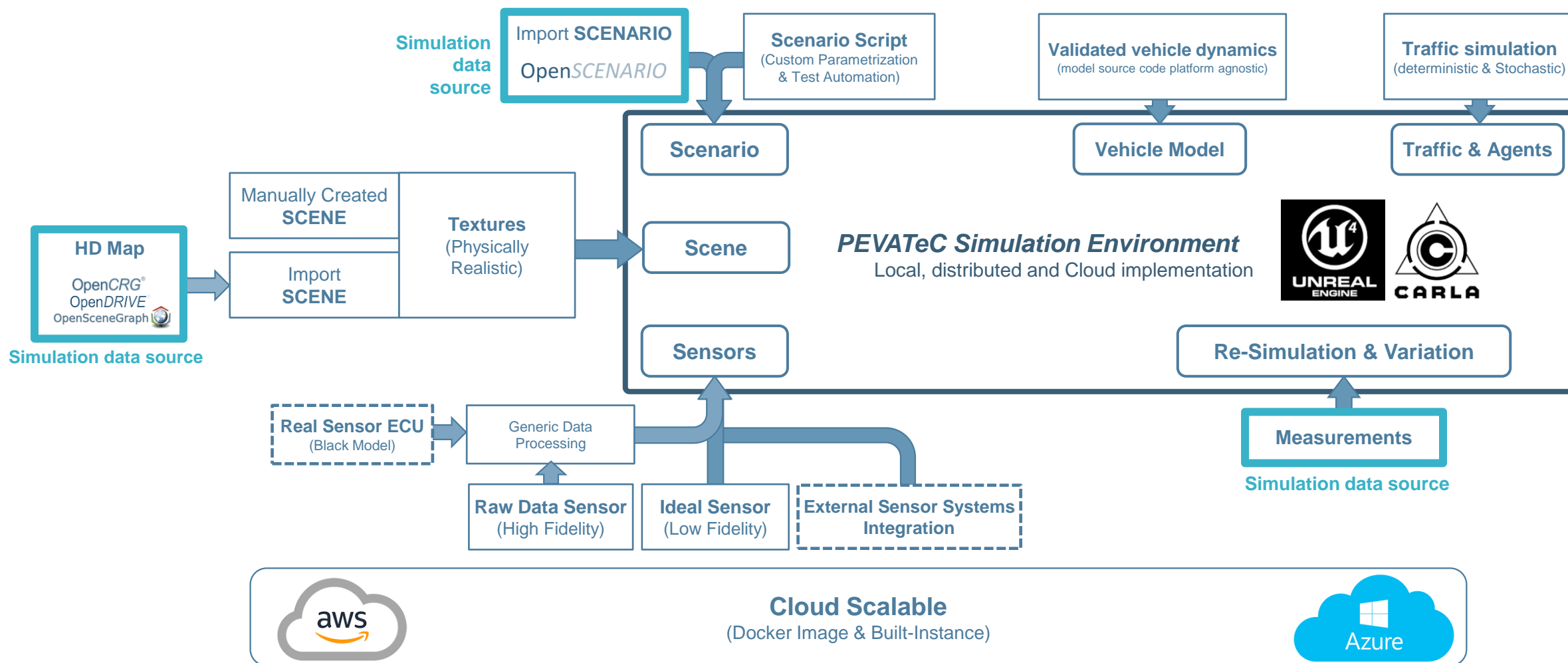


PEG – AB Models



## 3. PEVATeC in Customer Projects

Simulation for Driving Assistance Systems

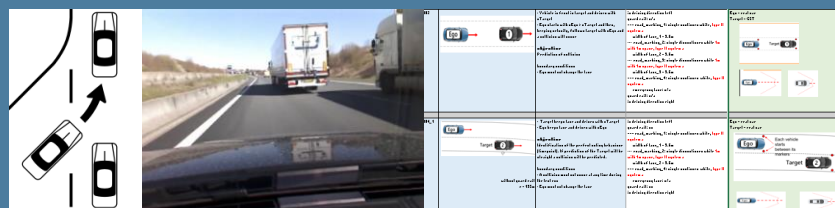


## 3. PEVATeC in Customer Projects

We work for Software developers

### 1. Test Plan Definition

- Scene/Scenario selection and test cases



- Our inputs: road data, elevation data, test cases and vehicle simulation.

### 2. Modelling Abstract Scenes/Scenarios

- Model abstract scene/scenario



- Interfaces & simulation environment



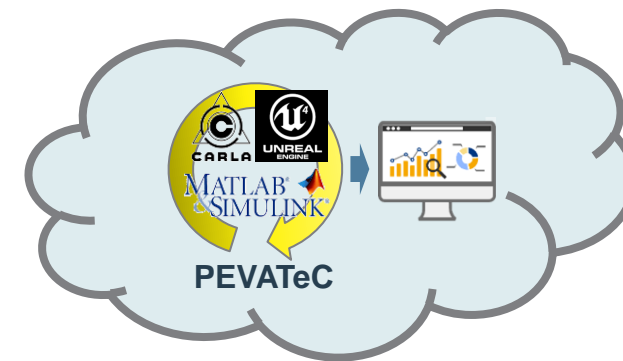
- User interface: parametrization

Camera\_Position ... VehOffset\_Lane VehErratic\_Lane

### 3. Simulation Variants and Training Data

#### PEVATeC Simulates

- Simulation parametrization
- Test automation of complete test plan



Create Tool for Software Developers

Independent executable simulation platform as local / cloud application

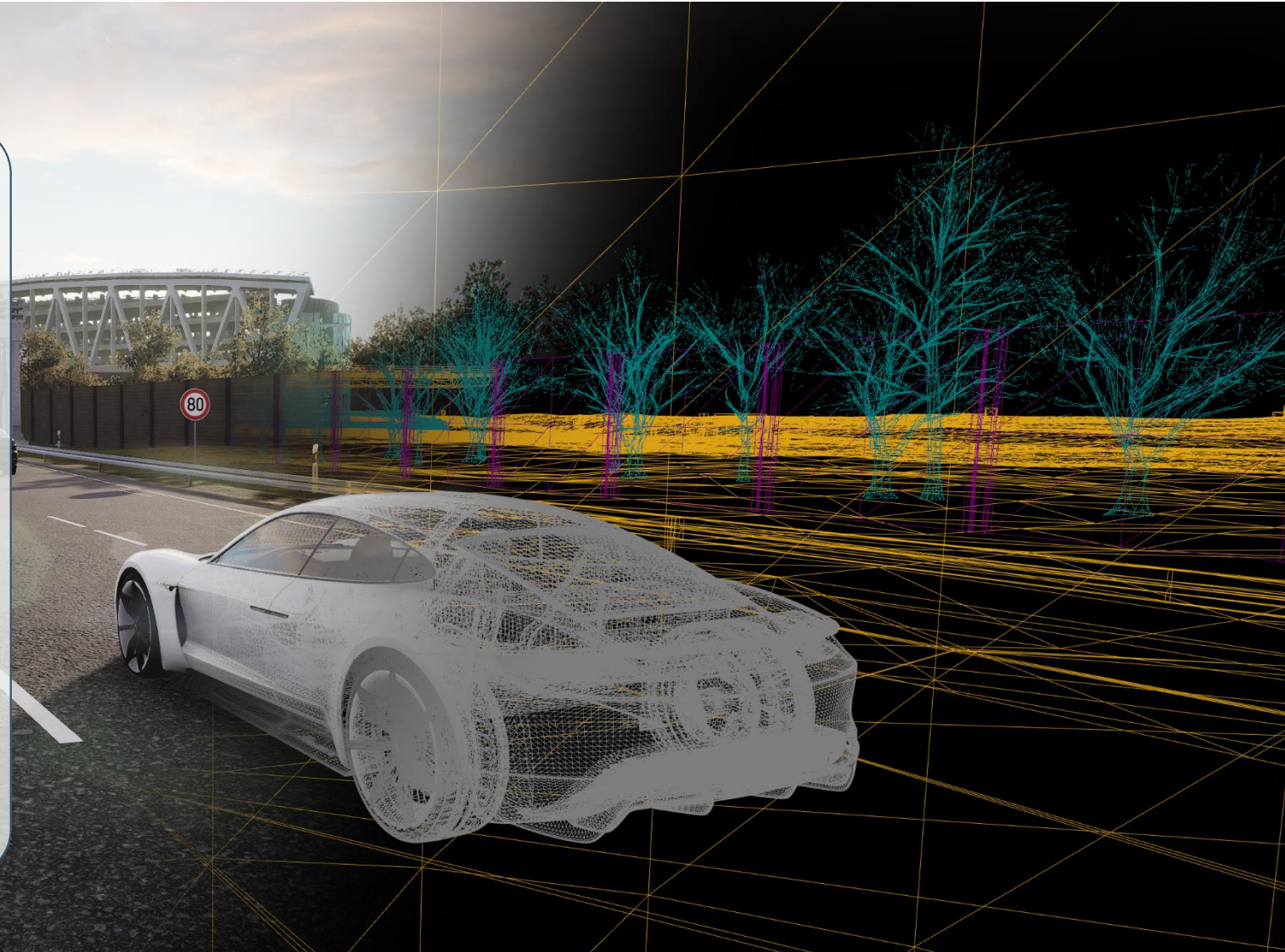


## 3. PEVATeC in Customer Projects



## PEVATeC – flexible and modular simulation environment for virtual ADAS/AD testing

- result of integrating years of experience in full vehicle simulation at Porsche Engineering and expanding it for particular customer needs in the ADAS/AD scope
- allows for customized parametrization of scene, scenarios, and sensors and smart integration of software algorithms into a full vehicle simulation environment
- provides a cloud agnostic development, scalable for efficient test automation and coverage analysis



# PEVATeC

## Porsche Engineering

### Virtual ADAS Testing Centre

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