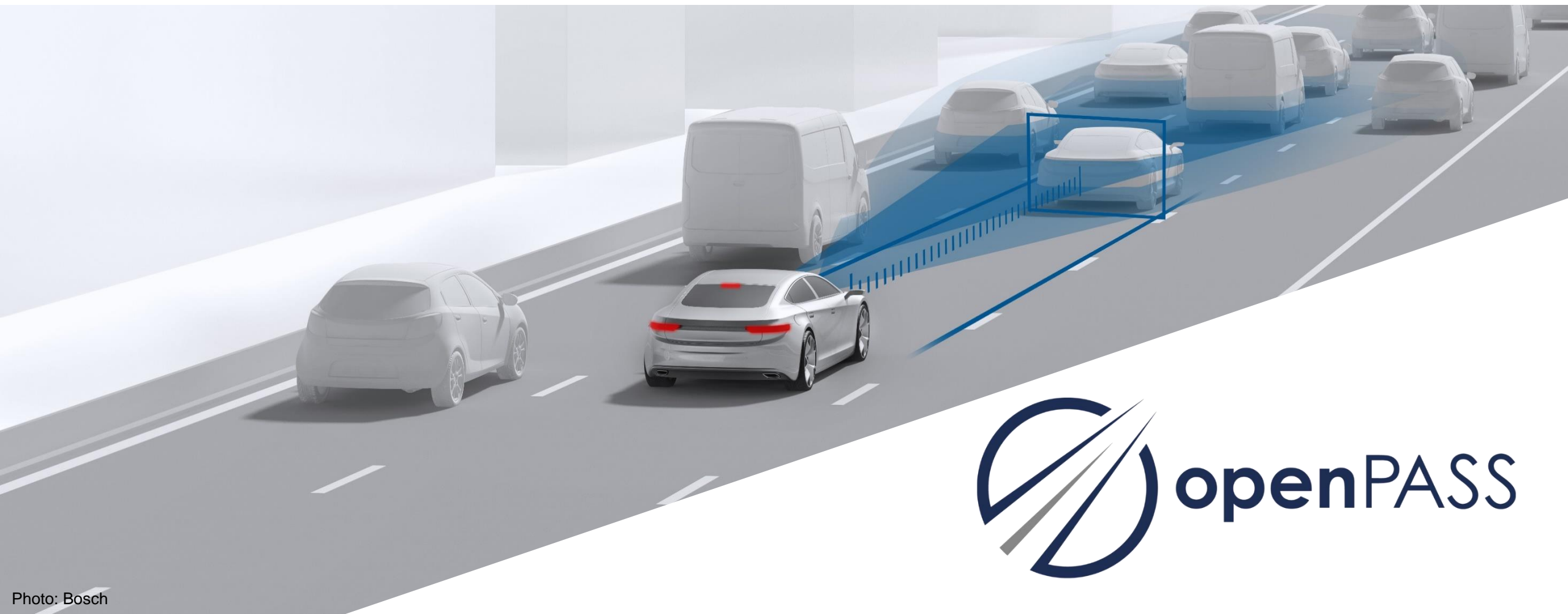


OPENPASS



TARGET OBJECTIVES



openPASS
(open **P**latform for **A**ssessment of **S**afety **S**ystems)

High level of transparency and acceptance
through publicly available open source platform



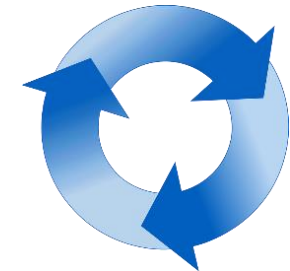
Traffic simulation of highway,
rural and urban scenarios

Stochastic variation
of scenarios



Standardized interfaces
for model integration

Reproducibility through
deterministic simulation



**Harmonized and flexible platform for effectiveness assessment of
advanced driver assistance systems and automated driving**

WORKING GROUP



openPASS Working Group

Driver members:



**BMW
GROUP**



BOSCH



VOLKSWAGEN
GROUP OF AMERICA

User member:

Service provider:

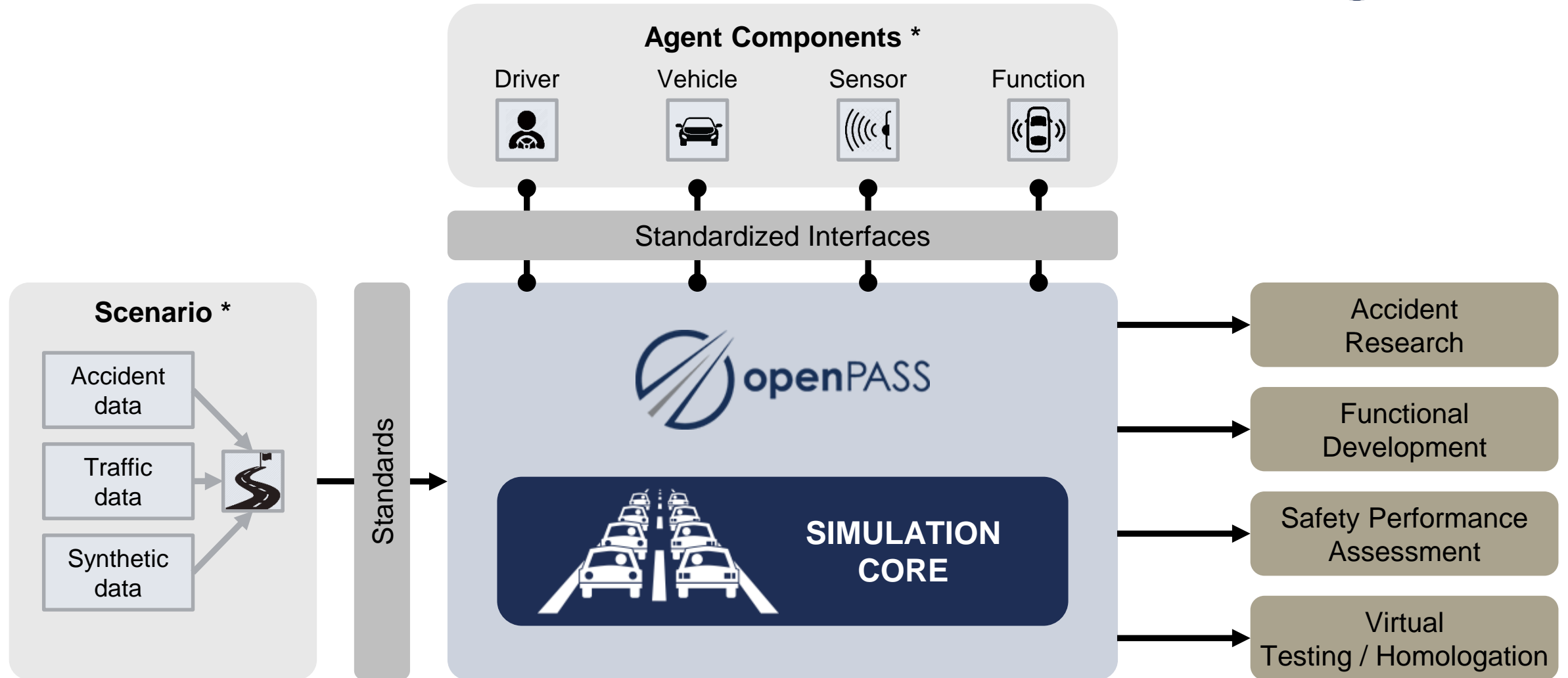
TOYOTA



Eclipse Automotive Working Groups

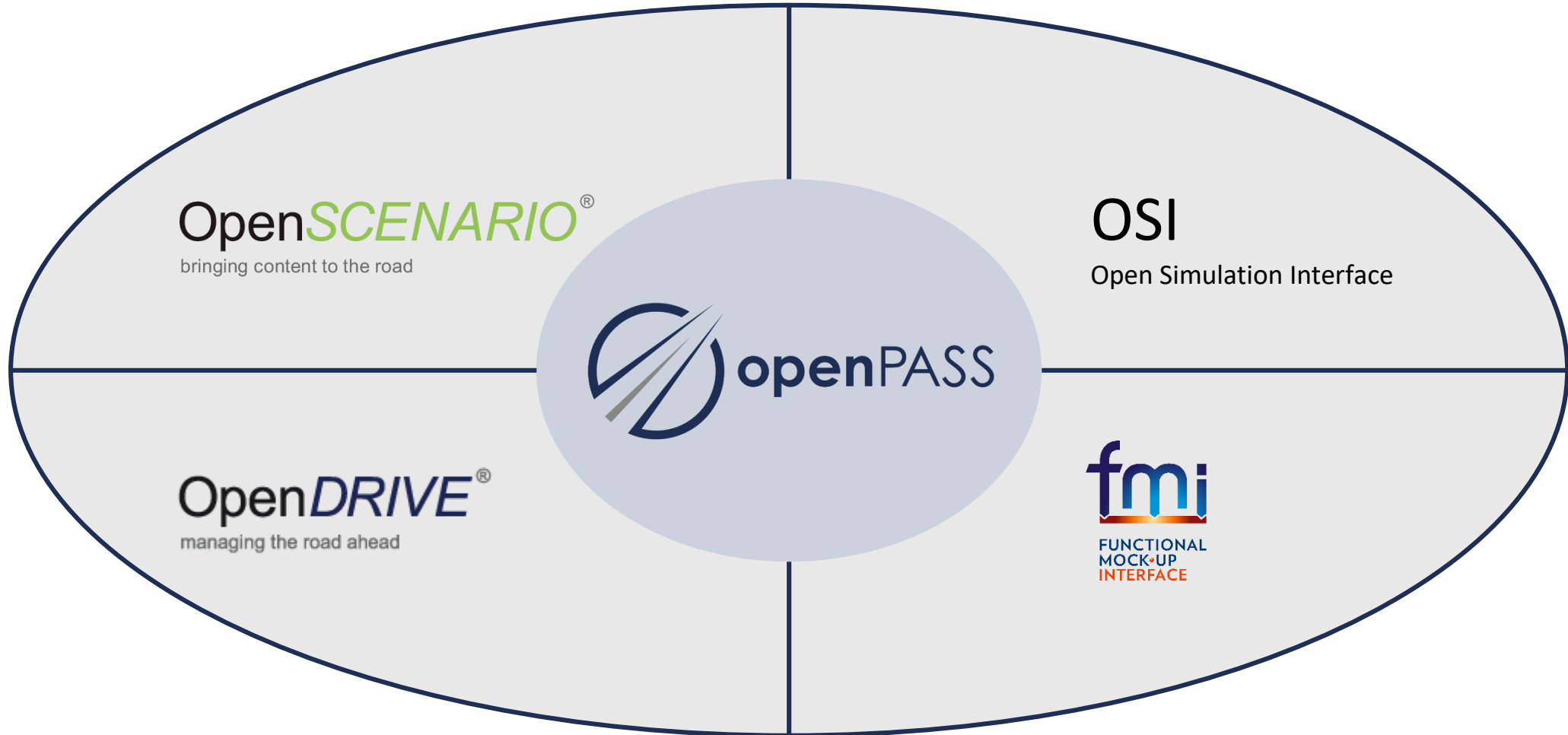


PLATFORM CONCEPT

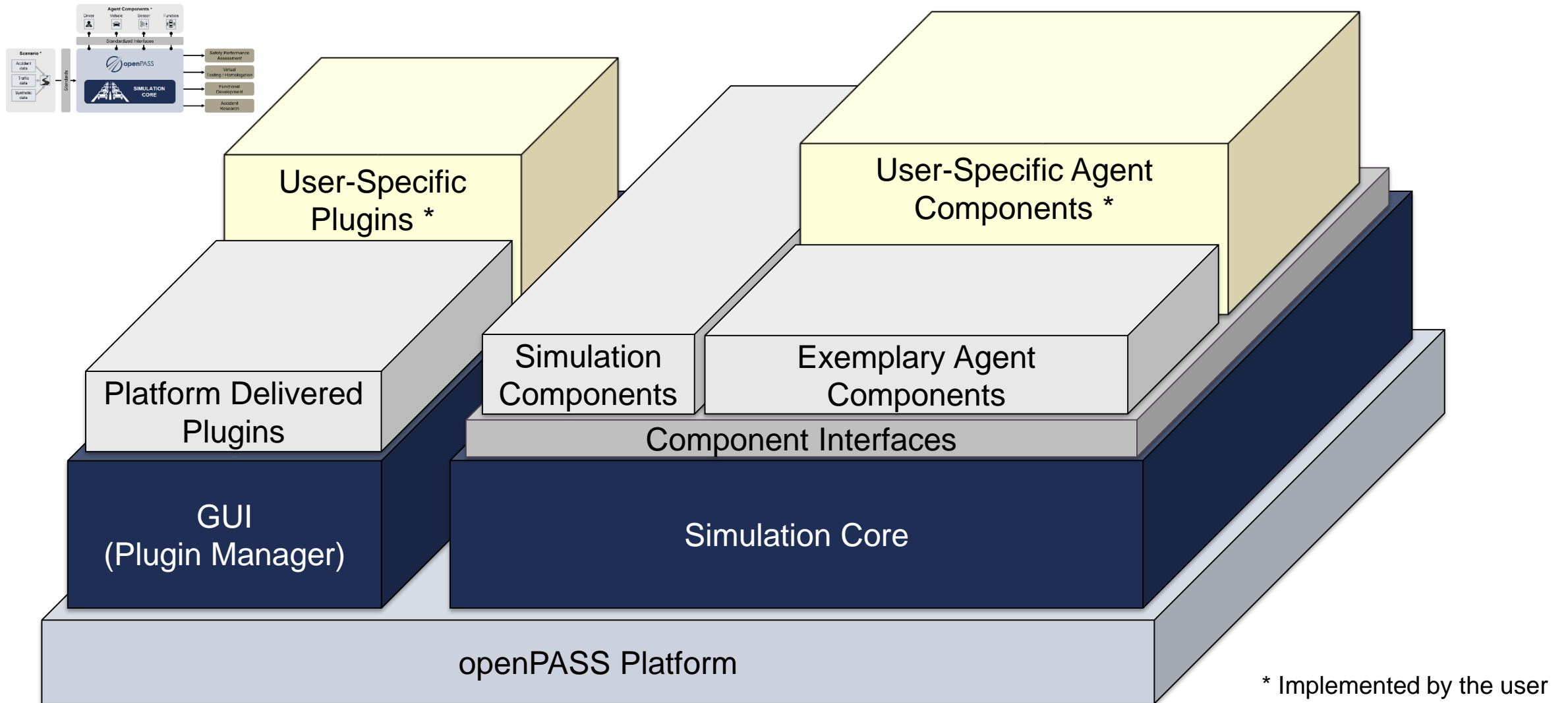


* Simple examples are provided

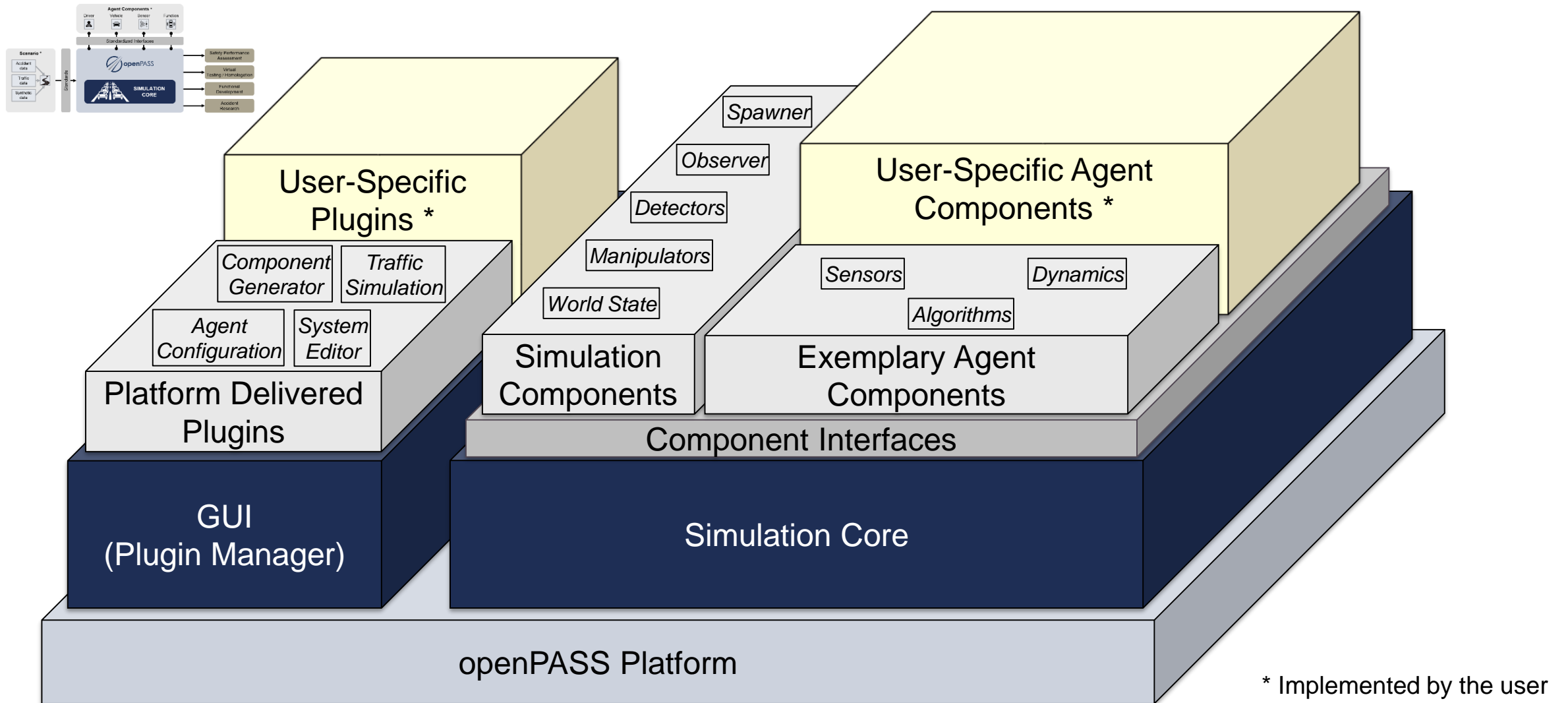
CURRENTLY AND FUTURE SUPPORTED STANDARDS



PLATFORM STRUCTURE



PLATFORM STRUCTURE



SIMULATION PROCESS USER PERSPECTIVE

Simulation Process



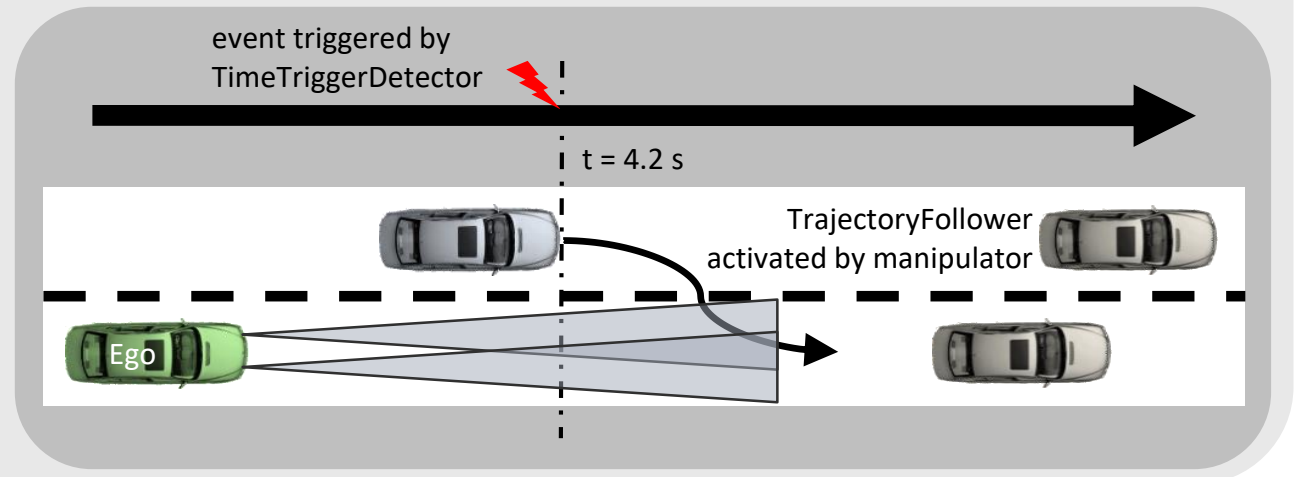
USE CASE TRAFFIC-SCENARIO SIMULATION

Features:

- Closed loop simulation of traffic scenarios
- Stochastic variation of the scenarios
- Intervention through detection of events and triggered actions
- Faster-than-real-time execution of the simulation

Example: AEB intervention triggered by passive cut-in manoeuvre

- Highway scenario with random surrounding traffic
- Ego vehicle with simple AEB system and abstract sensors
- Time-based event trigger
- Trajectory controlled lane change for scenario vehicle

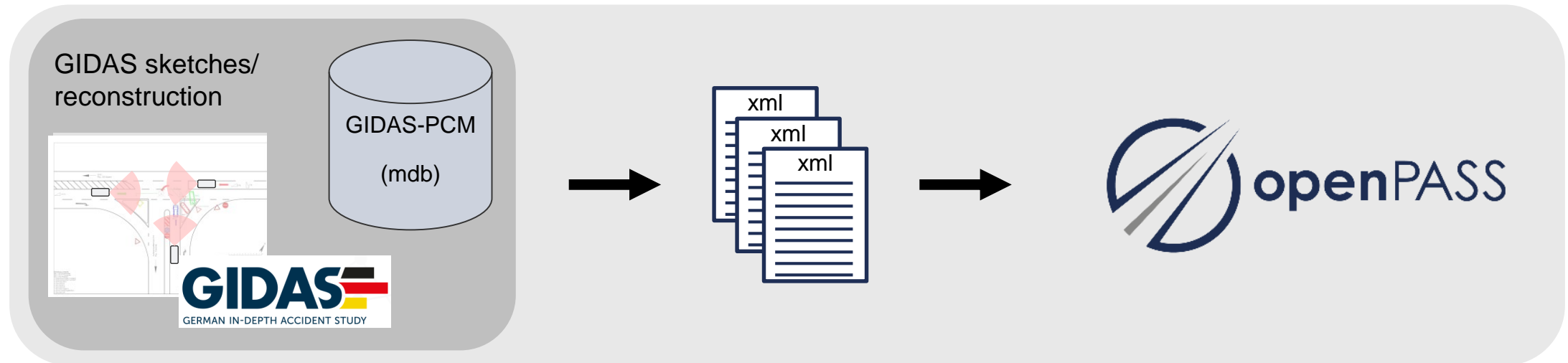


USE CASE CRASH RE-SIMULATION

Features:

- Create configuration files from GIDAS-PCM accident scenario database
- Stochastic variation of the scenarios (positions, velocities)
- Basis components for re-simulation: sensor, trajectory follower, two track vehicle model, impact calculation
- Store results in csv files in case folders

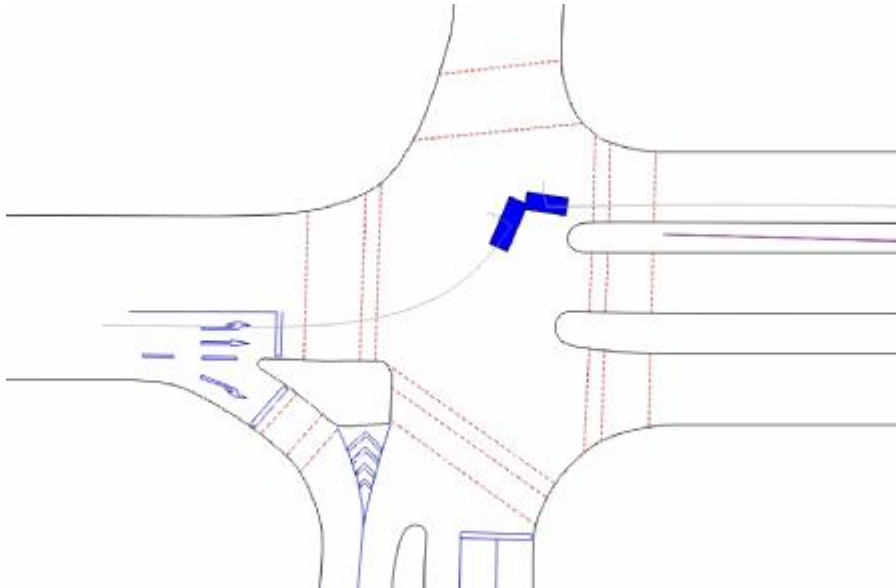
Example question: How many selected cases could be avoided by a AEB function?



EXEMPLARY SIMULATION RESULTS

Crash re-simulation from GIDAS-PCM case

Oncoming collision at intersection (LTAP – “left turn across path”) with post-crash behaviour



Traffic-scenario simulation

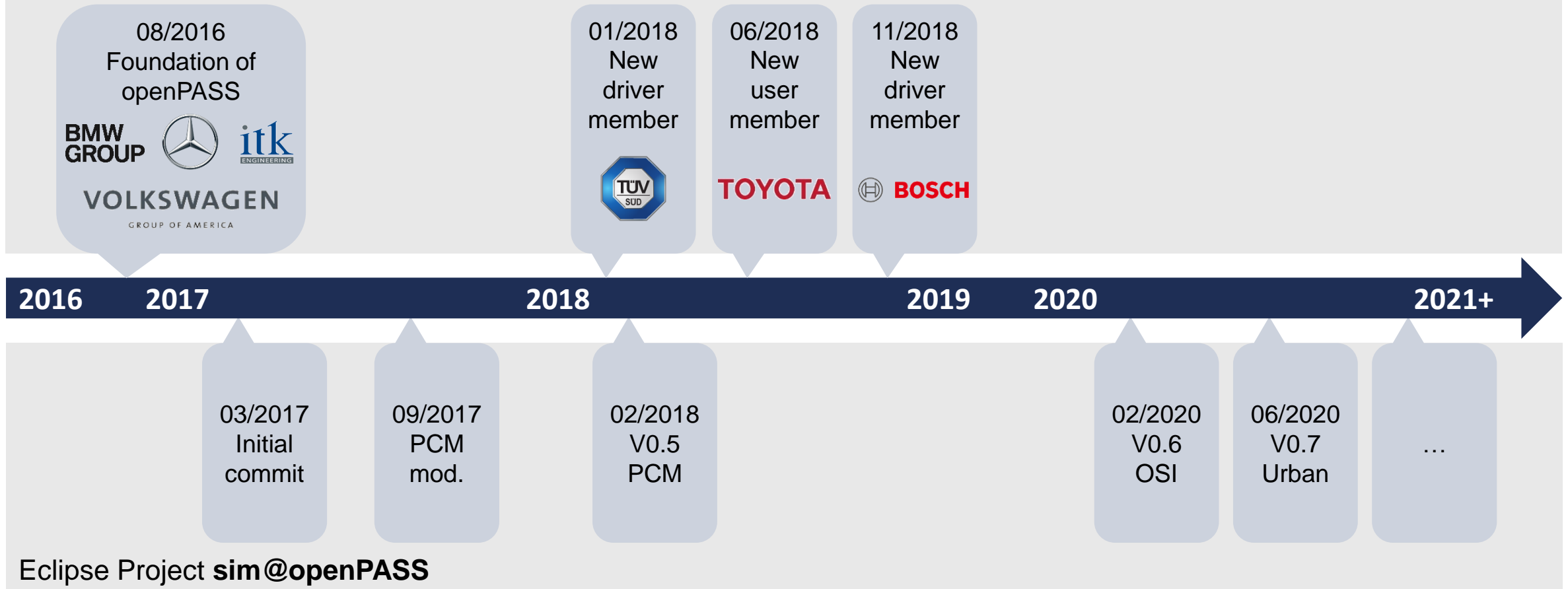
AEB intervention triggered by passive cut-in manoeuvre



TIMELINE



Eclipse Working Group **openPASS** (idea for openPASS generated within P.E.A.R.S. in 2014)



CONCLUSION

- openPASS is an open source platform for effectiveness assessment of advanced driver assistance systems and automated driving
- Open source platform for high level of acceptance and transparency
- Modular structure for easy platform extension und inclusion of user-specific models
- Support for standards and standardized interfaces for a flexible simulation setup
- Exemplary applications of openPASS:



Crash re-simulation



Traffic-scenario simulation

PARTICIPATION IN THE WORKING GROUP



Membership Privileges

Privilege	Driver Member	User Member	Service Provider Member	Project Manager
Steering Committee	X	Elected	Elected	-
Architecture Committee	X	-	-	X
Quality Committee	X	Elected	Elected	X
General Assembly	X	X	X	-



The company should be at least an Eclipse Solution Member

- Networking and learning
- The annual membership fee for Solutions Members is tiered based on revenue



Working Group participation agreement

- Contribution in development of openPASS
- Discussion of the roadmap
- Active collaboration with the working group

For more information, look at the openPASS charter:

https://www.eclipse.org/org/workinggroups/openpasswg_charter.php

COMMUNICATION WITH THE WORKING GROUP



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<https://accounts.eclipse.org/mailling-list/openpass-wg>