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OPENPASS

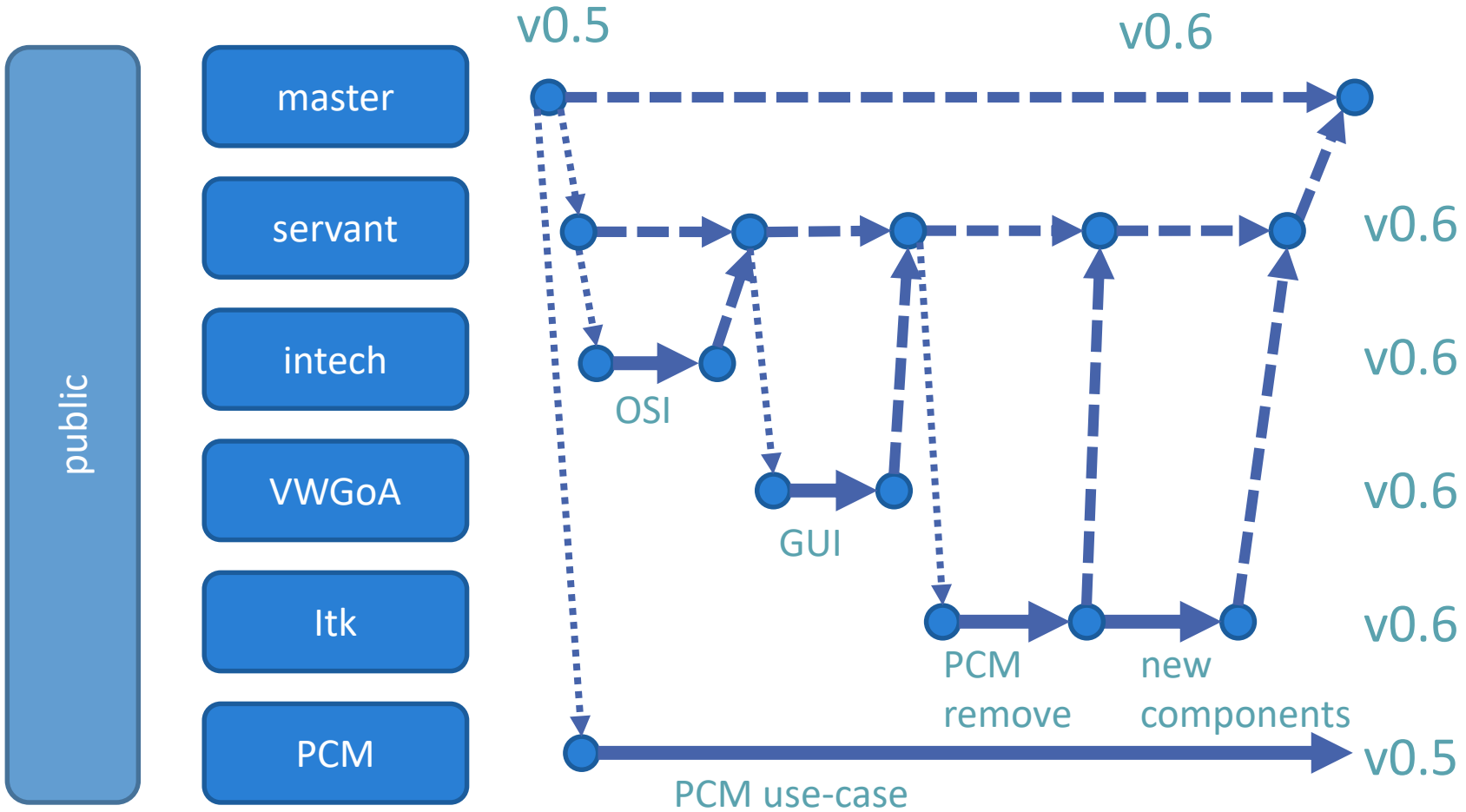
SC WORKSHOP
03.12.2019
TUAN DUONG QUANG

AGENDA

12:00 – 13:00 Lunch
13:00 – 13:15 Get together
13:15 – 13:30 Review of the roadmap (Tuan)
13:30 – 14:30 Use Cases of PCM (Jan)
14:30 – 14:45 Break
14:45 – 16:15 Prioritization and release planning of the remaining high-level targets (all)
16:15 – 16:30 How to write good user stories (Tuan)
16:30 – 16:45 Renaming openPASS (all)
16:45 – 17:00 Next workshop and further steps

REVIEW OF THE ROADMAP

Integration of new repository structure into the roadmap*



*the final discussed version can be found on https://wiki.eclipse.org/images/1/10/Repository_Structure.pdf

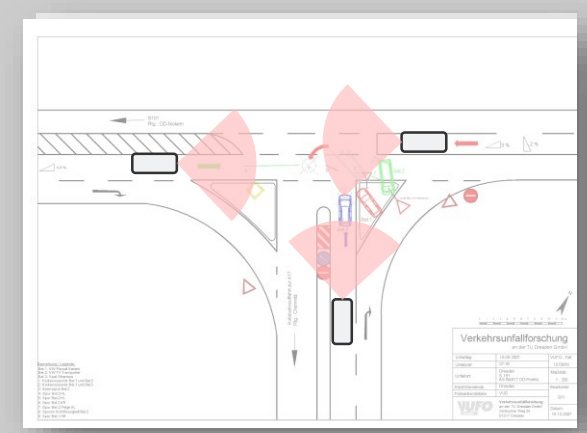
USE CASES OF PCM

OPENPASS

PCM SIMULATION WITH OPENPASS

PCM DATA FORMAT

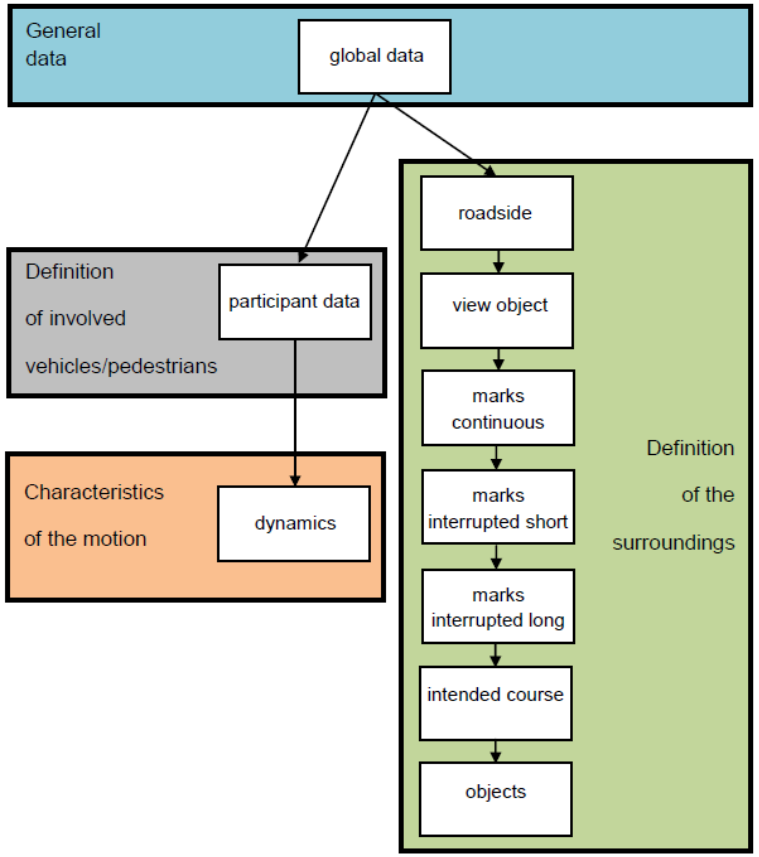
GIDAS sketches/ reconstruction



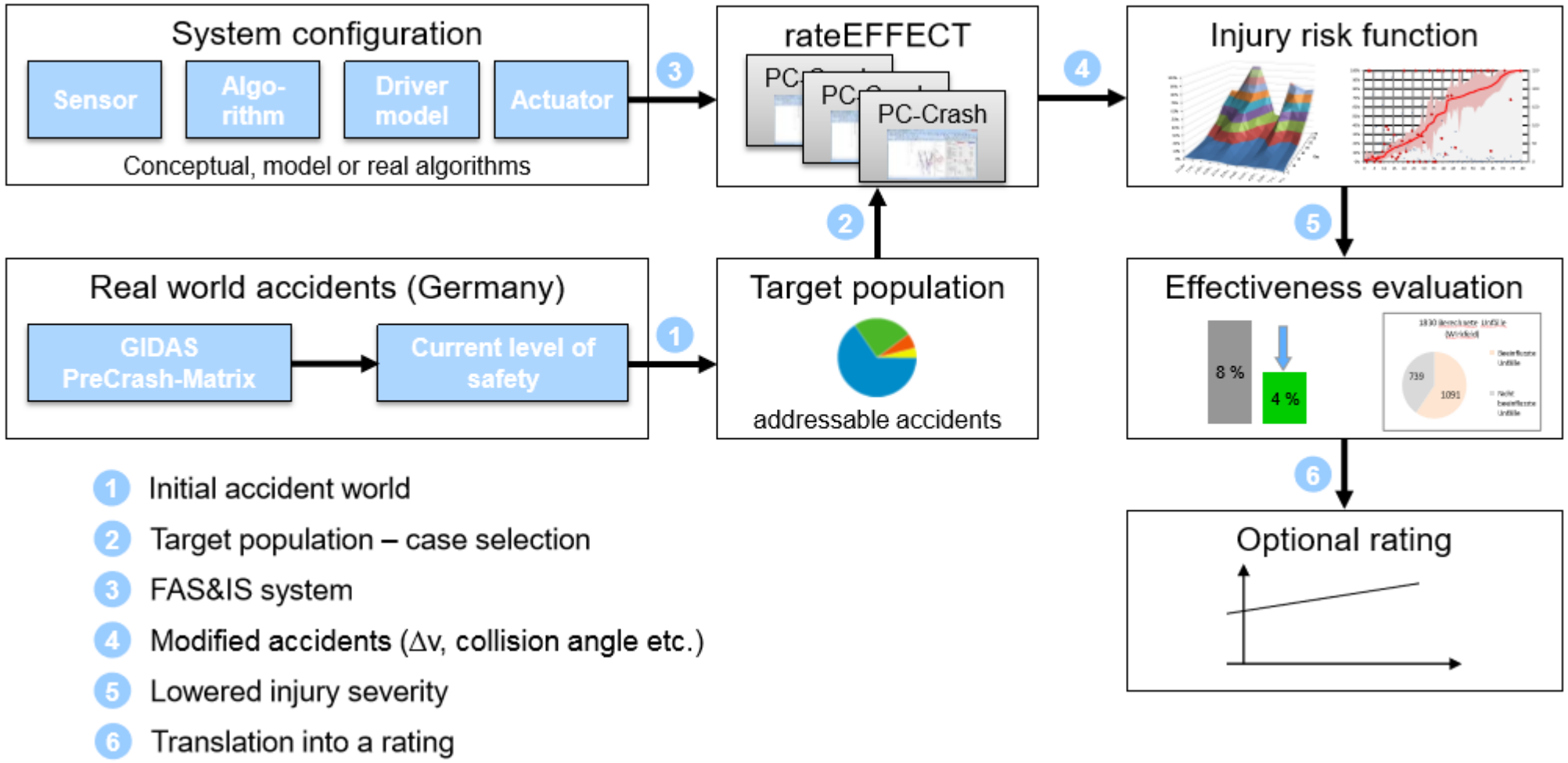
GERMAN IN-DEPTH ACCIDENT STUDY

GIDAS-PCM

(*.mdb)

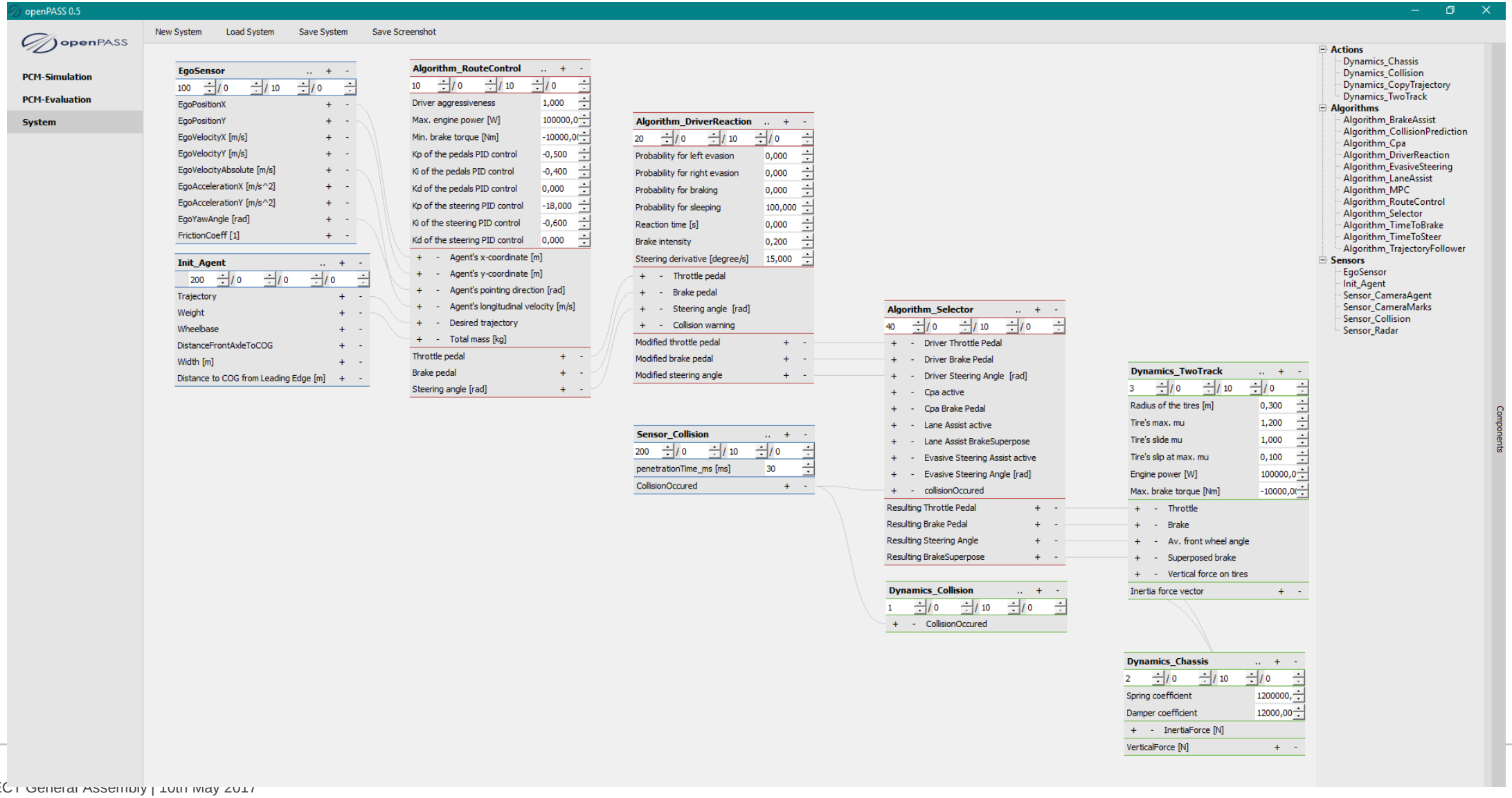


COMPARISON WITH RATEEFFECT

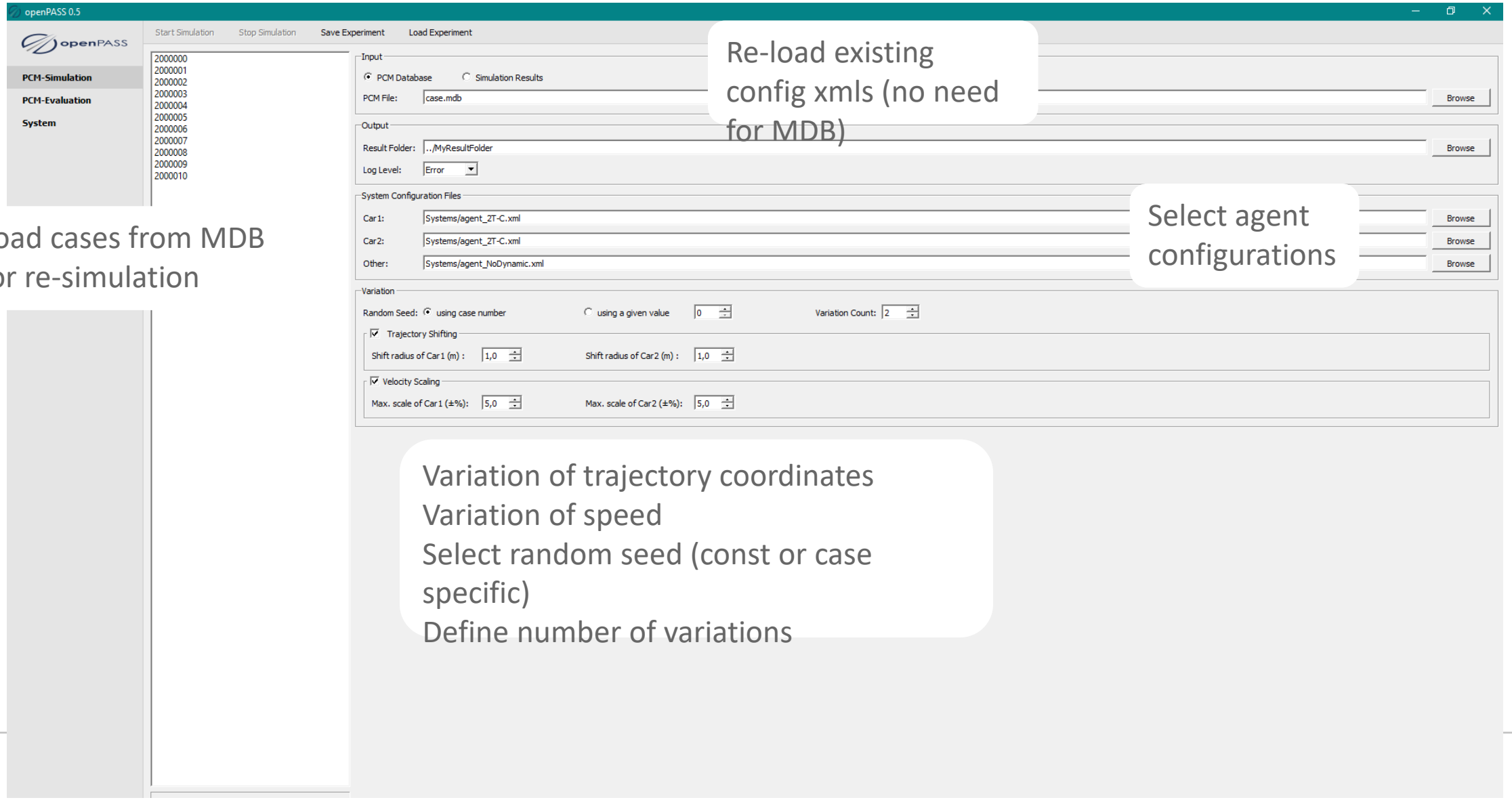


Source: https://bast.opus.hbz-nrw.de/opus45-bast/frontdoor/deliver/index/docId/672/file/33_Wille_rateeffect.pdf

OPENPASS SYSTEMCONFIG.XML & GUI/EDITOR



„PCM SIM“ PLUG-IN: GENERATE V0.5 CONFIGS FROM PCM DATABASE



Re-load existing config xmls (no need for MDB)

Load cases from MDB for re-simulation

Select agent configurations

Variation of trajectory coordinates
Variation of speed
Select random seed (const or case specific)
Define number of variations

VOLKSWAGEN

AKTIENGESELLSCHAFT

KONZERNFORSCHUNG

OPENPASS OSI USE CASE:

HOW TO PERFORM A PCM SIMULATION?

PERFORMING A PCM SIMULATION WITHIN THE OSI USE CASE

–HOW TO SETUP THE CONFIGS

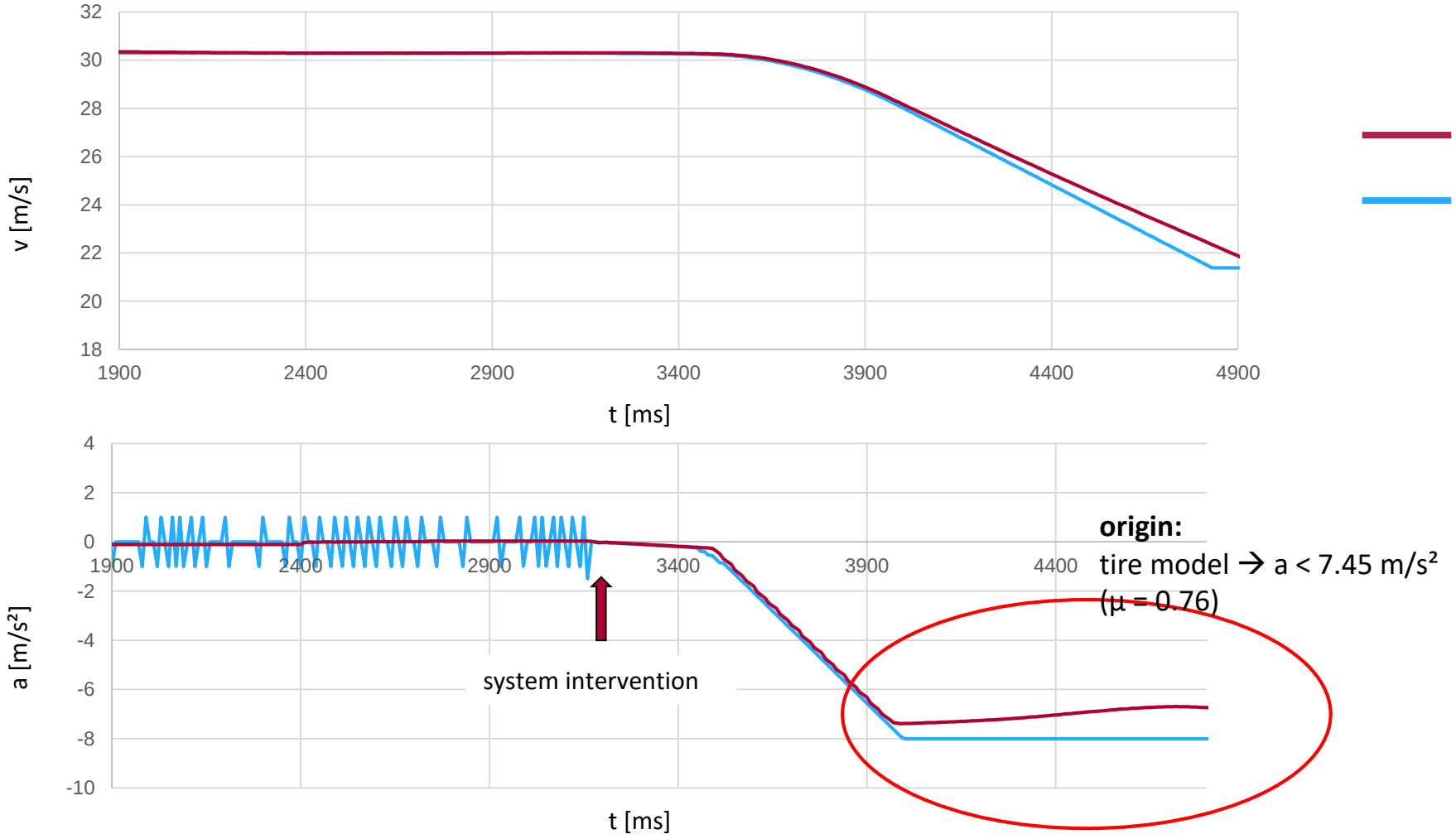
- define 2 agent profiles (ego and opponent, no traffic)
- export PCM trajectories to required XML format
- use trajectory follower for ego and opponent (**note:**
- use driver models with v = 0, i.e. drivers decelerate at the end of the trajectory
- incorporate ADAS into ego (so far, only AEB)
- scenery: so far huge 2000 m x 2000 m area

```
<VehicleProfile Name="EgoVehicle">
    <Model Name="Golf_template1"/>
    <Components>
        <Component Type="AEB">
            <Profiles>
                <Profile Name="AebOSI" Probability="1.0" />
            </Profiles>
            <SensorLinks>
                <SensorLink SensorId="0" InputId="Camera"/>
                <SensorLink SensorId="1" InputId="Camera"/>
            </SensorLinks>
        </Component>
        <Component Type="Dynamics_TrajectoryFollower">
            <Profiles>
                <Profile Name="EgoTrajectoryFollower" Probability="1.0" />
            </Profiles>
        </Component>
    </Components>
```

```
<DriverProfiles>
    <DriverProfile Name="EgoDriver">
        <String Key="Type" Value="AlgorithmAgentFollowingDriverModel"/>
        <String Key="AlgorithmLateralModule" Value="Algorithm_LateralAfdm"/>
        <String Key="AlgorithmLongitudinalModule" Value="Algorithm_LongitudinalAfdm"/>
        <Double Key="VelocityWish" Value="0.0"/>
        <Double Key="MaxDeceleration" Value="8.0"/>
    </DriverProfile>
    <DriverProfile Name="Regular">
        <String Key="Type" Value="AlgorithmAgentFollowingDriverModel"/>
        <String Key="AlgorithmLateralModule" Value="Algorithm_LateralAfdm"/>
        <String Key="AlgorithmLongitudinalModule" Value="Algorithm_LongitudinalAfdm"/>
        <Double Key="VelocityWish" Value="0.0"/>
        <Double Key="MaxDeceleration" Value="8.0"/>
    </DriverProfile>
</DriverProfiles>
```

PERFORMING A PCM SIMULATION WITHIN THE OSI USE CASE

–SIMULATION RESULTS: COMPARING OPENPASS AND RATEEFFECT



PERFORMING A PCM SIMULATION WITHIN THE OSI USE CASE

–SUMMARY

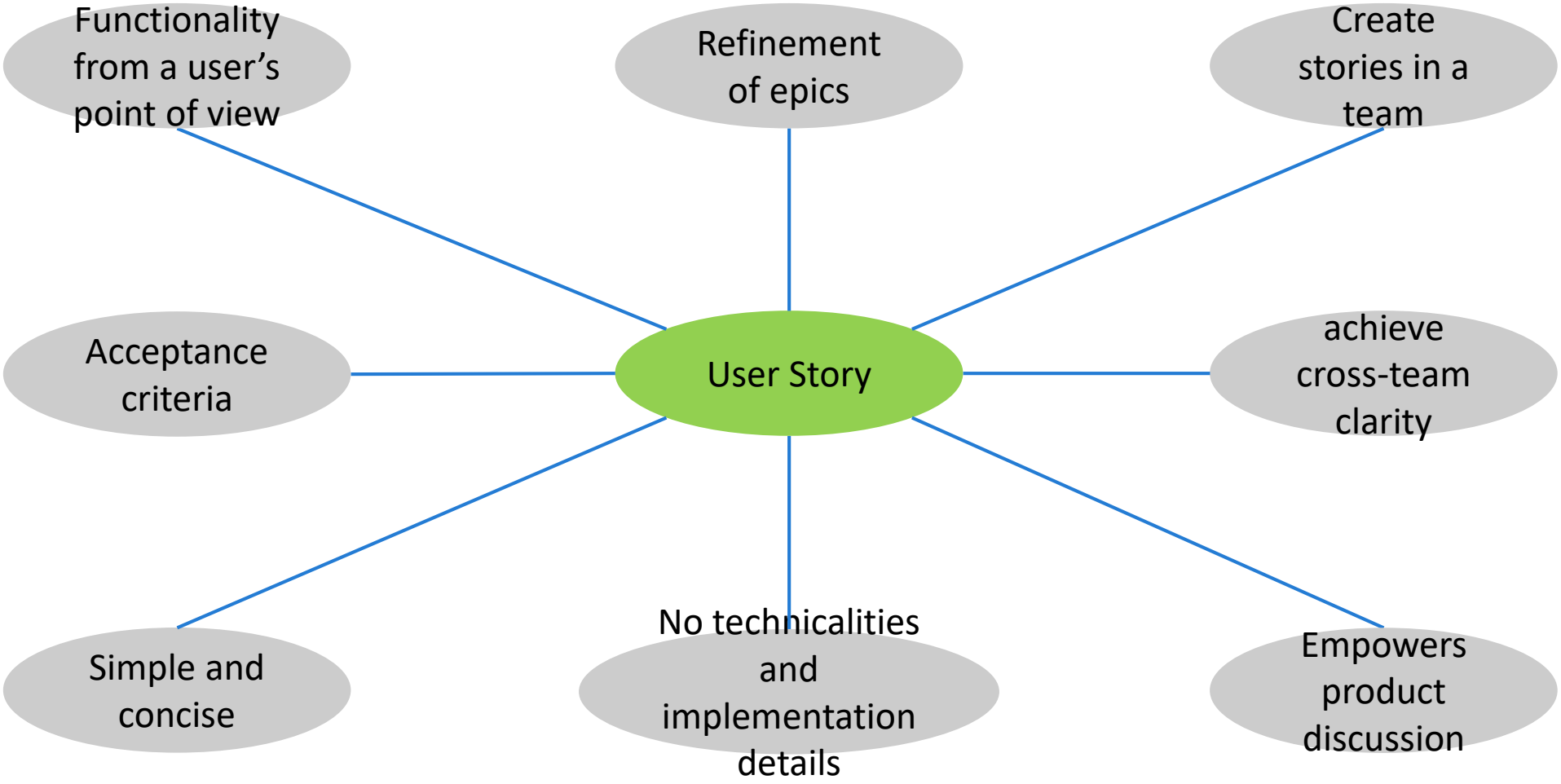
- protocol for PCM simulation via trajectory follower and
- interventions by ADAS can be incorporated if limited to longitudinal acceleration (i.e. no lane keeping support so far)
- main deviation from internal tool: technical limitations due to tire model

- <u>next steps:</u>
  - incorporate correct road network (openDRIVE)
  - extending the trajectory follower module to consider technical limitations → PID controller from PCM plugin?
  - allow for lateral accelerations in order to simulate lane keeping support as well

BREAK

PRIORITIZATION AND RELEASE PLANNING OF THE REMAINING HIGH-LEVEL TARGETS

HOW TO WRITE GOOD USER STORIES



HOW TO WRITE GOOD USER STORIES

Good user stories:

- As a new user, I want to get guided through the GUI by a tutorial such that I can start my first simulation without having read the documentation. Acceptance criteria: The user can start further simulations based on the knowledge he learned in the tutorial.
- As a regular user, I want to see a global top view visualization of the simulation run such that I have a better imagination of the simulated scenario. Acceptance criteria: Visualization which shows the moving agents in a road environment.

RENAMING OPENPASS

Open Platform for Assessment of **Safety Systems**

→Open Platform for Assessment of **System Safety**

TO DOS AND FURTHER STEPS

Tasks:

- Formulate User Stories out of the high-level targets

Next Workshop:

- User story refinement meeting