openPASS AC Workshop - 04.12.2019

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Location: Gebäude DEGI, Schulungsräume, 1. Obergeschoss, Posener Straße 1, 71065 Sindelfingen
Participants

- ☑ [Das Arun, FG-461](#) (BMW Group)
- ☑ [Manel Hammouda (Manel.Hammouda@bmw.de)](#) (BMW Group)
- ☑ [Per Lewerenz (per.lewerenz@daimler.com)](#) (Mercedes Benz AG on behalf of Daimler TSS)
- ☑ [Jan Dobberstein (jan.dobberstein@daimler.com)](#) (Mercedes Benz AG on behalf of Daimler TSS)
- ☑ [Tuan Duong Quang (Tuan.DuongQuang@tuev-sued.de)](#) (TÜV SÜD Auto Service GmbH)
- ☑ Alexander Eliseev (TÜV SÜD Auto Service GmbH)
- ☑ [Dmitri.Fix@itk-engineering.de](#) (ITK Engineering GmbH)
- ☑ [Daniel.Schmidt6@de.bosch.com](#) (Robert Bosch GmbH)
- ☑ [Stark, Lukas (K-GERT/A)](#) (VW on behalf of VW GoA)
- ☑ [Schoenawa, Stefan, Dr. (K-GERT/A)](#) (VW on behalf of VW GoA)
- ☑ [rene.paris@in-tech.com](#) (intech on behalf of BMW)
- ☑ [Biegel, Reinhard](#) (intech on behalf of BMW)
- ☑ Fabian Gottwald (EDAG on behalf of VW GoA)

Notes

Status on pull request for scenario based simulation and GUI topics

- An example experiment for a simulation on a urban junction is to be included in the repository --> Epic will be created
- GUI: Compatibility of the GUI with the simulation kernel will be tested before the next GUI commit.
- Results Plugin: License issues are still under discussion → Will be discussed on Thursday 05.12.2019 with Wayne Beaton. Plugin will not be released in v0.6 --> Epic will be created (ToDo: Daimler)

Config session

VW demonstrated the current status of the GUI. In parallel the configuration files were shown and parameters were discussed. Discussed topics:

- Currently there are two references (from SlaveConfig.xml and Scenario.xosc) to the profilesCatalog.xml. The reference in the slaveConfig.xml is actually used. The other reference, given in the Scenario.xosc, is not used but has to be given (empty reference does not work, but it has to have at least length one).
- Path to the slave executable and library folder should be shown in the GUI but not be editable for the user --> Fields will be visualized in gray and not be editable (ToDo: VW GoA)
- ToDo: Instructions for installation have to be extended by a note warning the user not to change default paths in order to guarantee compatibility with the GUI.
- VW will run the simulation with a manually created systemConfig, which imitates parts of the systemConfigBlueprint.xml. If the simulation fails, BMW is available to support the debugging process.
- For creating the xml-metadata description for the visualization of the systemConfigBlueprint,xml in the GUI System Editor, EDAG will get in touch with BMW to finalize the xml-Files.
- When configuring agents of dynamic type (based on systemConfigBlueprint.xml), some components which are used in the simulation are not shown in the system editor (e.g. SensorFusion). In the concept for creating agents this has to be considered, as it might lead to confusion for users.
- When linking sensors to ADAS, signals are shown in the GUI. However, the connections are not real signals which are used by the simulation kernel but they are logical connections. Therefore, a clear distinction has to be made. The xml-metadata files will be adjusted not to contain the term "signal". In the long run, a clear visual difference between signals and logical connections has to be incorporated (ToDo: VW GoA)
- The sections "SensorProfiles", "VehicleComponentProfiles", and "DriverProfiles" in the profilesCatalog.xml can be interpreted as catalogs (analog to the VehicleModelsCatalog) --> it has to be checked if there are corresponding catalogs officially available in openSCENARIO. (ToDo: BMW)
- Agent profiles currently have the type static or dynamic. As this is slightly misleading, the types will be renamed into staticSystem and stochasticSystem. Changes in the GUI will be made for v0.6. The core will be adjusted in a later release - epic #1225. (ToDo: VW GoA)

- The config names "slaveConfig.xml" and "systemConfigBlueprint.xml" are currently hardcoded.
- The master-slave-architecture is currently not used, as the slave is started directly from the GUI. However, in future the parallel execution of multiple experiments or invocations could be realized in future.

Identified features for future development:
- Enable spawning through definition of x/y coordinates (epic #1213)
- Provide trajectories directly in the Scenario.xosc in standard compliant way (epic #1232)

Visualization and editing of the systemConfigBlueprint in System Editor
For Release v0.6 the systemConfigBlueprint.xml will remain with strings as ID's. In Release v0.7 it is planned to change to integer ID's and enable the GUI to view the Blueprint.

Process of creating agents from systemConfigBlueprint & discussion
A presentation on how agents are created during the simulation was given by intech (see 20191204 _openPASS_ExecutionFlow.pdf).

The mechanism of instantiating all necessary components for an agent of type dynamic currently relies on the systemConfigBlueprint.xml and hardcoded component references in the source code. In order to have a transparent way of creating agents, the user needs to know about all instantiated components. Therefore, the hardcoded list of components has to be removed and a way for showing the user all needed components has to be found. Currently a uniform way of creating agents without differentiation into dynamic and static agents is under discussion (epic #1225 is extended).

Status of modular driver:
A presentation of the current status of the architecture was given by Daimler (see 20191204 _openPASS_ModularDriverArchitectur.pdf).

Discussion: Contributors vs. Committers:
The process for external developers to commit code does not require committer privileges. Instead, developers have to register with the Eclipse. Afterwards, they have contributor rights, meaning they can directly create pull request on the servant branch. In special cases, the AC can also decide to temporarily create an individual branch for a contributor, if it appears to have advantages for the development.

Pull requests can be denied by the AC, if contents do not match the project goals or requirements. In this case, the contributors have to create own forks to host their code and provide it to the public.

ToDo: Tuan will compare our approach with the process of other open source projects (e.g. openMDM).

Wiki for documentation:
Decisions made by the AC need to be documented centralized, as single decisions are difficult to find throughout the individual meeting minutes. For now, the wiki provided by the eclipse will be used: https://wiki.eclipse.org/OpenPASS_planning.

ToDo: Tuan will evaluate how other working groups have organized their colaboration (e.g. openMDM, openADx).

Interface discussions (duplications, missing functionality, extensions):
A presentation on necessary refactoring of interfaces was given by intech (see 20191204_Draft_AgentInterface_Refactoring.pdf). The agent interface served as exemplary interface for the discussion.
The following topics were discussed:
- Changes in the interfaces should be documented in the commit message.
- Some conventions for the openPASS project still have to be defined (e.g. the location of the reference point - OSI uses middle of bounding box, so far we usually use middle of rear axle)
- An epic was created to plan the refactoring of all interfaces (epic #1233).
- An overview of how framework components, agent components and interfaces work together needs to be created (containing e.g. Agent, AgentAdapter, World_OSI, AgentInterface and worldInterface) --> Dmitri created a graphic, which will be discussed in the next AC.

CollisionDynamics and TwoTrackDynamics:
A presentation of current work by Daimler, Bosch and ITK was given by ITK (see 20191204 _openPASS_OSI_TwoTrack_Collision.pdf). A calculation for angles and velocity during a collision was implemented. Also, the

TwoTrack Dynamics of the PCM use case have been transferred to the OSI use case by incorporating them into the DynamicsRegularDriving Module.

For testing purposes, a static agent configuration will be set up. The feature will be incorporated into a release after v0.6, presumably already in v0.7. Also the experiment configuration shall be included in the commit to provide an example configuration.

Concept for logging metadata:

A concept for logging metadata like simulator version and file paths has been developed and shown by intech (see 20191204 _SimulationVersioning_and_RuntimeInformation.pdf). BMW and intech are currently working on this topic. There were no dissenting votes.

Usage of FMT library:

The advantages of the fmt library have been presented by intech (see 20191204_openPASS_fmtLibrary.pdf). The usage of the library in the sim@openPASS project was accepted unanimously by the AC.

Upgrade to C++20:

An update to C++20 will be discussed once the standard has been released officially.

Project directory structure:

A refinement team will develop a concept on how to structure the project. There have already been discussions by different partners, which will be brought together for the refinement.

Pull request for scenario based simulation (by intech):

The pull request created by intech to merge content for scenario based simulation from the intech to the servant branch has been reviewed during the discussions in this meeting. The PR was accepted and merged during the AC meeting.