DETAILS ON THE ATTRIBUTES WITHIN SCENARIO ENGINE AND DATABASE

Enabling the finding of relevant scenarios in large databases

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Advanced Scenario Engine

The Advanced Scenario Engine (ASE) enables the fully automated extraction of parameters and attributes for the scenario database from data provided in the Omega-Format. The scenario database enables the efficient search of relevant scenarios through attributes and performs the creation of logical scenarios for testing through its parameters. The first step of the ASE is to separate the data in the OMEGA-Format into enveloping scenarios, defined by an ego-vehicle withing Layer 1 boundaries. From the enveloping scenarios, attributes, parameters and further focus scenarios are extracted. Attributes are designed to enable the search and subset selection in the scenario database, whereas parameters enable the creation of logical scenarios out of the database entries. In the

process of creation simulation scenario in e.g. OpenScenario a stakeholder defines a relevant scenario through formulating a query on the scenario database attributes. The scenario database then is able to create a set of logical scenario with their parameter spaces corresponding to the selected subset. From these logical scenarios, concrete OpenScenario instructions for the simulation can be sampled.

General Descriptive Entity Attributes

The selection of relevant scenarios in the scenario database can be performed through a set of attribute concepts. One of these concepts is the General Descriptive Entity Attributes (GDEA), which is an abstraction of the ground truth data provided by an enveloping scenario and added semantics.
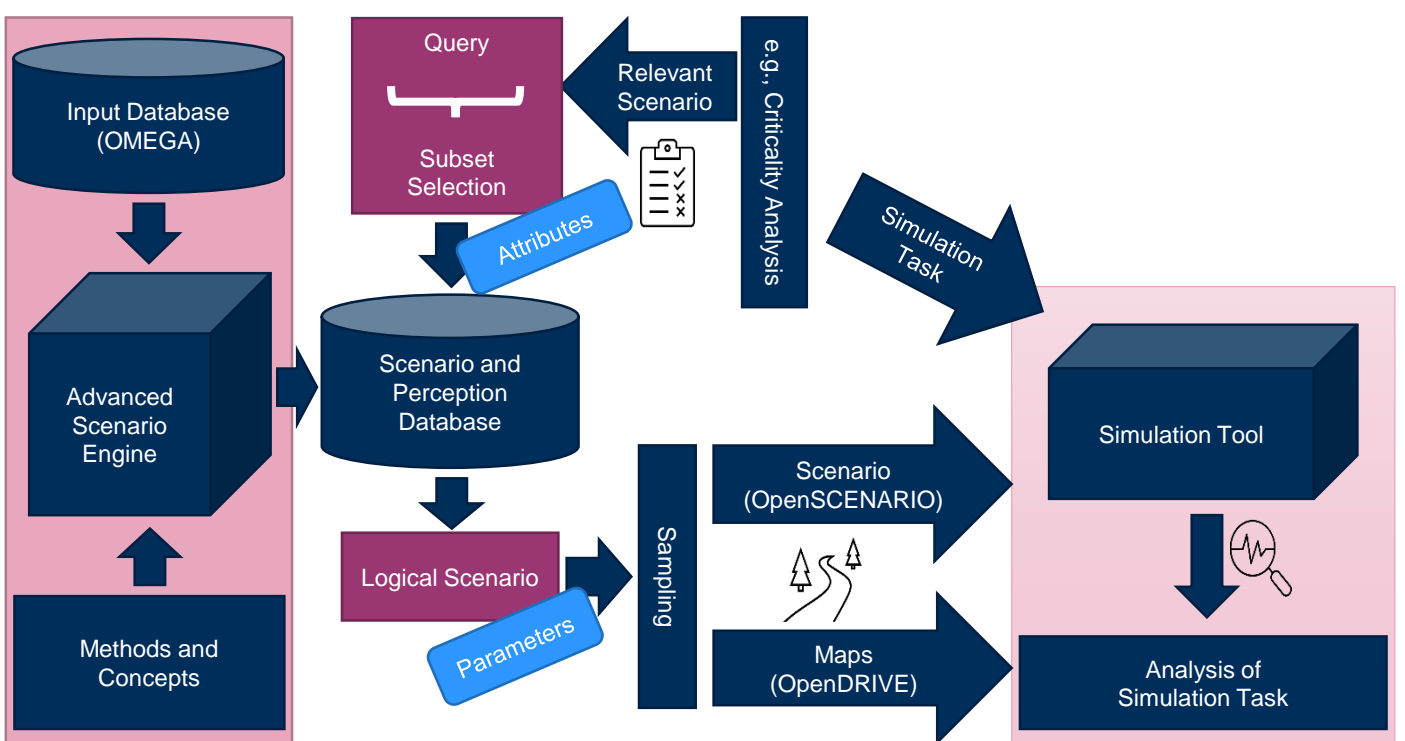
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General Descriptive Entity Attributes
Every object and infrastructure is put into relation to a selected ego vehicle. To lanes, semantics describing their relation to the ego vehicle path are added. The positioning of entities is given through lane coordinates. These semantics enable the efficient and human understandable search of scenarios indifferent to the concrete geometry of the road network.


TSE-Storyboard
A key feature is the abstraction of dynamics such as trajectories to a non-equidistant description through events in the temporal-scenario-entity-storyboard (TSE-Storyboard). Details on the dynamics and relations of objects are only described at the points of these events. Through a chaining of these events, complex scenarios can be queried from the scenario database. Meanwhile, attributes that are constant throughout the whole enveloping scenario are described only once, simplifying the scenario representation

Takeaways
→ Attributes enable the subset selection and querying of scenarios in the scenario database
→ Parameters enable the creation of logical scenarios from the scenario database
→ GDEA is one set of attributes that enable the efficient and understandable search in the scenario database
→ For more information on the creation of logical scenarios take a look at the "A story of scenarios" poster!
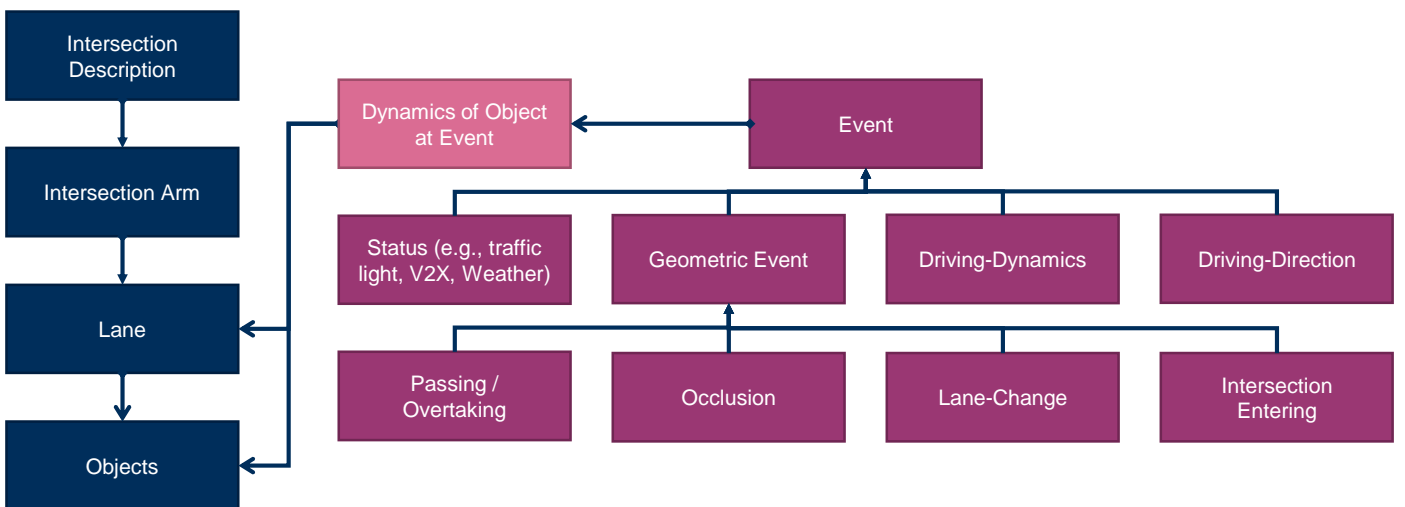
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