

# Implementation of an OSI World for openPASS

23.07.2018 – Reinhard Biegel

## Overview

“A generic interface for the environmental perception of automated driving functions in virtual scenarios.”

<https://github.com/OpenSimulationInterface/open-simulation-interface>

- Provides data structures for:
  - Moving and stationary objects
  - Lanes
  - Traffic lights and signs
  - Environmental properties
  - Various structures for “detected” objects
  - ...
- Defines coordinate systems, datatypes for coordinate representation
- Based upon protobuf library → serialization included
- OSI Sensor Model Packaging (OSMP) describes structure of functional mock-up units (FMU), uses FMI 2.0
- Well documented
- Actively developed, everyone can create/comment on issues on GitHub

# Open Simulation Interface

## Import and conversion of scenery

- Input format: OpenDRIVE 1.4
- Lane-based representation of road network
- Simple use-case: Two lanes in same direction, segments: straight and clothoid-arc-clothoid

## Spawning behaviour

- Spawning with  $v = \text{const.}$ , std. dev.
- Lane randomly chosen
- Despawn when leaving the road

## Driver

- Driving along lane with  $v = \text{const.}$
- Extension: Adapt speed to vehicle in front
- No lane changes

## Proposed features for first implementation

**February 2018**

OpenDRIVE Importer

**March 2018**

OSI extension

**April 2018**

openPASS adaption

**May 2018**

OSI extension release/PR

**June 2018**

World\_OSI  
release



- Static objects
- Traffic signs
- Roadmarkings

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- Roads, Sections, Lanes
- Writing converted scenery data into OSI structures
- Miniumum world-representation in openPASS

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- Localization of Agents in road-coordinates
- Implement World-/AgentInterface
- Simple spawnpoint
- Simple driver model

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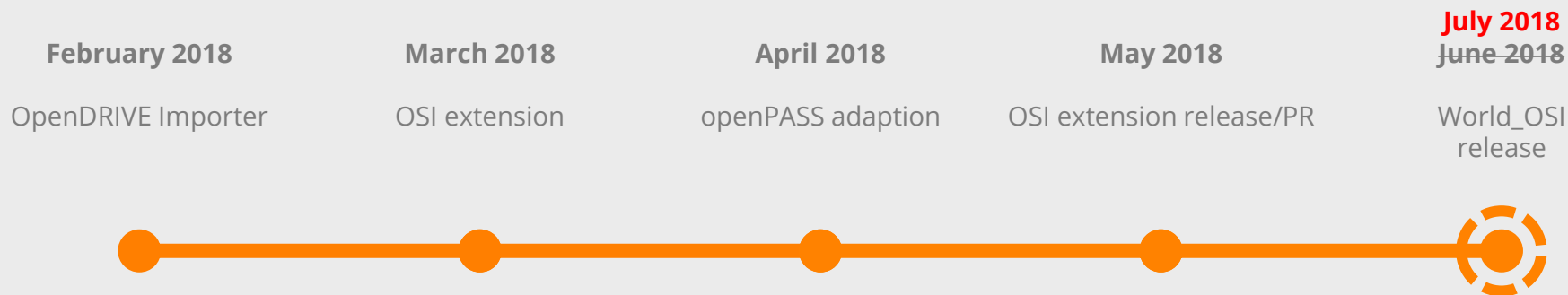
OSI extension release/PR

**June 2018**

World\_OSI  
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- OSI Pull-Request + discussion
- Implement World-/AgentInterface
- Localization
- Driver „cruise control“ extension



- Implement World-/AgentInterface
- Release of World\_OSI



## Complete the implementation of current interfaces

- AgentInterface
- WorldInterface

## Handling of intersections

- Currently only a single road is supported
- Conversion has to be implemented
- Localization has to be adapted

## Future development

Thank you for your attention