

# ASAM OpenSCENARIO® XML 1.4.0

## Release Presentation

19 May 2026  
ASAM



Association for Standardization of  
Automation and Measuring Systems

# Agenda

Six sections

1. Introduction
2. Motivation For New Release
3. New Features
4. Cross-Standard Harmonization
5. Backward Compatibility
6. Relations To Other Standards
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# Introduction

What ASAM OpenSCENARIO XML is

ASAM OpenSCENARIO XML comprises the specification and file schema for the description of dynamic content in driving-simulation applications.

The primary use case is the description of predictable highly precise scenarios that include complex maneuvers of multiple vehicles.

ASAM OpenSCENARIO XML may be used with external test specifications in virtual development, test, and validation of driver assistance, automated and autonomous driving functions.

Scenario descriptions are essential for testing, validating, and certifying the safety of driver-assistance systems and autonomous cars.



# Motivation For New Release

Four forces behind 1.4.0

- **Construction-site scenarios:** implementers needed an unambiguous way to describe scenarios where temporary lane markings overlay permanent ones.
  - Coordination with the OpenDRIVE working group has produced a coordinated solution shipping in ASAM OpenDRIVE 1.9.0 and ASAM OpenSCENARIO XML 1.4.0 simultaneously.
- **Trajectory expressiveness:** long-standing requests to specify speed and acceleration along trajectories, required for many ADAS test scenarios, are now resolved.
- **Trajectory harmonization:** Clarify default motion interpolation along trajectories enabling aligned behavior between tools.
- **Cross-OpenX harmonization:** vehicle and pedestrian categories and traffic-participant roles are aligned with the [ASAM Traffic Participants Specification](#).
- **Traffic-signal semantics:** newly introduced semantics to clearly separate visual state, semantic state and naming

# New content of OpenSCENARIO XML 1.4.0

Six feature themes

- **Lane layers:** LaneLayerType enum and PreferredLaneLayerAction
- **Trajectory motion:** new Motion class with speed and acceleration values, added explicit equations for motion
- **Trajectory interpolation:** new Interpolation class for polylines
- **Traffic signal semantics:** new TrafficSignalSemantics enum (six states)
- **Traffic participant harmonization:** VehicleCategory, Role, PedestrianCategory
- **Catalog reuse:** TrafficDistributionEntry becomes a catalog element

# New Features

## Lane layers and construction sites

- **New LaneLayerType enum values:** permanent, temporary
- **New PreferredLaneLayerAction** sets a preferred layer for an entity in case of ambiguity
- Default routing updated to consider the lane layer
- Priority hierarchy introduced for handling conflicting lane layer values
- Designed in coordination with OpenDRIVE 1.9.0 lane-layer support

### Advantages:

- Construction-site scenarios on OpenDRIVE 1.9.0 maps can now be described unambiguously
- Entities can move between permanent and temporary lane layouts



# New Features

Trajectory motion — speed and acceleration

New Motion class for trajectory shape elements (Vertex, Clothoid, ClothoidSpline, ClothoidSplineSegment)

## Two attributes:

- @speed\_longitudinal speed along the trajectory's s-axis at the position
- @acceleration\_longitudinal acceleration along the trajectory's s-axis

At least one of the two attributes must be provided (cardinality 0..1 each)

An overview for resolving conflicting parameters has been added to the spec

## Advantages:

- Speed-based ADAS scenarios that previously required custom controllers are now expressible directly
- Trajectories carry a motion profile, not just a path

# New Features

## Trajectory interpolation

New Interpolation class currently a placeholder element with no attributes

If present on a polyline trajectory, the interpolation behavior is delegated to the consuming tool

If absent, the default interpolation rules and equations of the standard apply

Future releases may introduce explicit interpolation settings inside this element

### Advantages:

- Tool vendors can use richer interpolation strategies without breaking schema validity
- Forward-compatible foundation for future explicit interpolation specifications

# New Features

## Traffic-signal phase semantics

- Previously, the **@name** attribute on a phase was overloaded to carry semantic meaning
  - as multiple phases may carry the same semantics, name was not guaranteed to be unique braking the possibility to reference phases within Actions and Conditions
- New TrafficSignalSemantics enum carries the semantics directly (six states):
  - **go**: traffic is allowed to pass the designated stopping position
  - **stop**: traffic must not pass the designated stopping position
  - **caution**: traffic must be cautious but may proceed
  - **attention\_go**: traffic should prepare for go phase
  - **attention\_stop**: traffic must not pass unless stopping safely is not possible
  - **fallback**: traffic must fall back to applicable priority rules
- Distinction made between semantic state (go, stop) and observable state (red, amber, green)
- A new example has been added to showcase the new feature and the handling of signals in general

# New Features

## Traffic participant harmonization

- VehicleCategory, Role, and PedestrianCategory unified with other ASAM standards via the ASAM Traffic Participants Specification
- **VehicleCategory added:** aircraft, heavyTruck, micromobilityDevice, standupScooter, watercraft, wheelchair, workMachine, landVehicle, other
  - **Deprecated:** motorbike (use motorcycle); truck (use heavyTruck or van)
- **Role added:** agriculture, construction, dangerousGoodsTransport, fireBrigade, freightTransport, garbageCollection, other, roadsideAssistance, specialTransport, trafficControl
  - **Deprecated:** fire (use fireBrigade); roadAssistance (use roadsideAssistance)
- **PedestrianCategory:** wheelchair deprecated (now in VehicleCategory)
- **Advantages:**
  - Cross-OpenX consistency with OpenDRIVE 1.9.0 signal semantics, OpenSCENARIO DSL, and OSI
  - Reduces ambiguity at the seams between standards

# New Features

Catalog reuse and expression additions

- TrafficDistributionEntry now implements the CatalogElement interface
  - New supporting class: TrafficDistributionEntryCatalogLocation
  - Allows reuse of TrafficDistribution definitions in multiple scenarios via the catalog mechanism
- Aligns with the gradual extension of the expression language begun in earlier releases

# Backward Compatibility

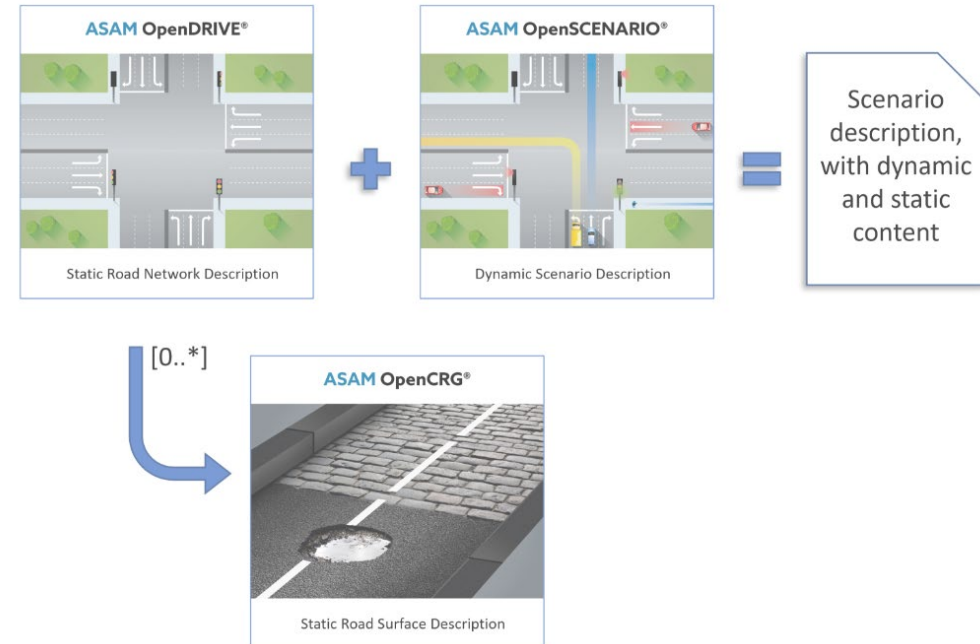
1.4.0 is fully backward-compatible with 1.3.1

- ASAM OpenSCENARIO XML 1.4.0 is fully backward-compatible with v1.3.1.
- All additions are optional new attributes and elements have cardinality 0..1.
- Existing 1.3.x scenarios validate against the 1.4.0 schema unchanged.
- Tool vendors should be aware of deprecations in the harmonized enums:
  - motorbike → motorcycle, truck → heavyTruck/van
  - fire → fireBrigade, roadAssistance → roadsideAssistance
  - wheelchair (PedestrianCategory) → wheelchair (VehicleCategory)
- Deprecated values continue to validate but new scenarios should use the harmonized names.

# Relations To Other Standards

OpenSCENARIO XML in the OpenX simulation toolchain

- Logical road network: ASAM OpenDRIVE particularly version 1.9.0 (see cross-standard harmonization slide)
- Static signal placement and signal grouping: ASAM OpenDRIVE
- Dynamic signal cycles, phases, and states: ASAM OpenSCENARIO XML
- Simulation interfaces: ASAM OSI entity vocabulary aligned with OpenSCENARIO XML 1.4.0 via the Traffic Participants harmonization
- 3D models of road, scenery and objects: CityGML, OpenSceneGraph, glTF, FBX, 3ds



# Deliverables

Documents and additional items

## Documents:

- OpenSCENARIO XML 1.4.0 Specification
- Enterprise Architect UML model reference

## Supplementary Files:

- ASAM\_OpenSCENARIO\_v1.4.0-Schema.zip
- ASAM\_OpenSCENARIO\_v1.4.0-Model.zip
- ASAM\_OpenSCENARIO\_v1.4.0-Migration.zip
- ASAM\_OpenSCENARIO\_v1.4.0-Examples.zip

**Thank you for your attention**