ASAM OpenDRIVE Concept Project WP04
International Sings Model

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Online Meeting

ASAM
Association for Standardization of
Automation and Measuring Systems

ASAM Open X Standard Overview

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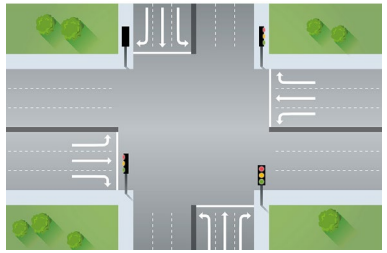
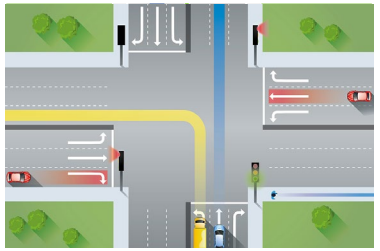
ASAM Open X Standard Overview

Static road network description



ASAM OpenDRIVE®

dynamic scenario description

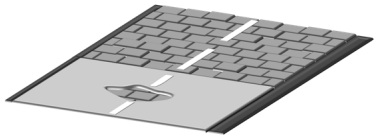


ASAM OpenSCENARIO®

Scenario description, with dynamic and static content

[0..*]

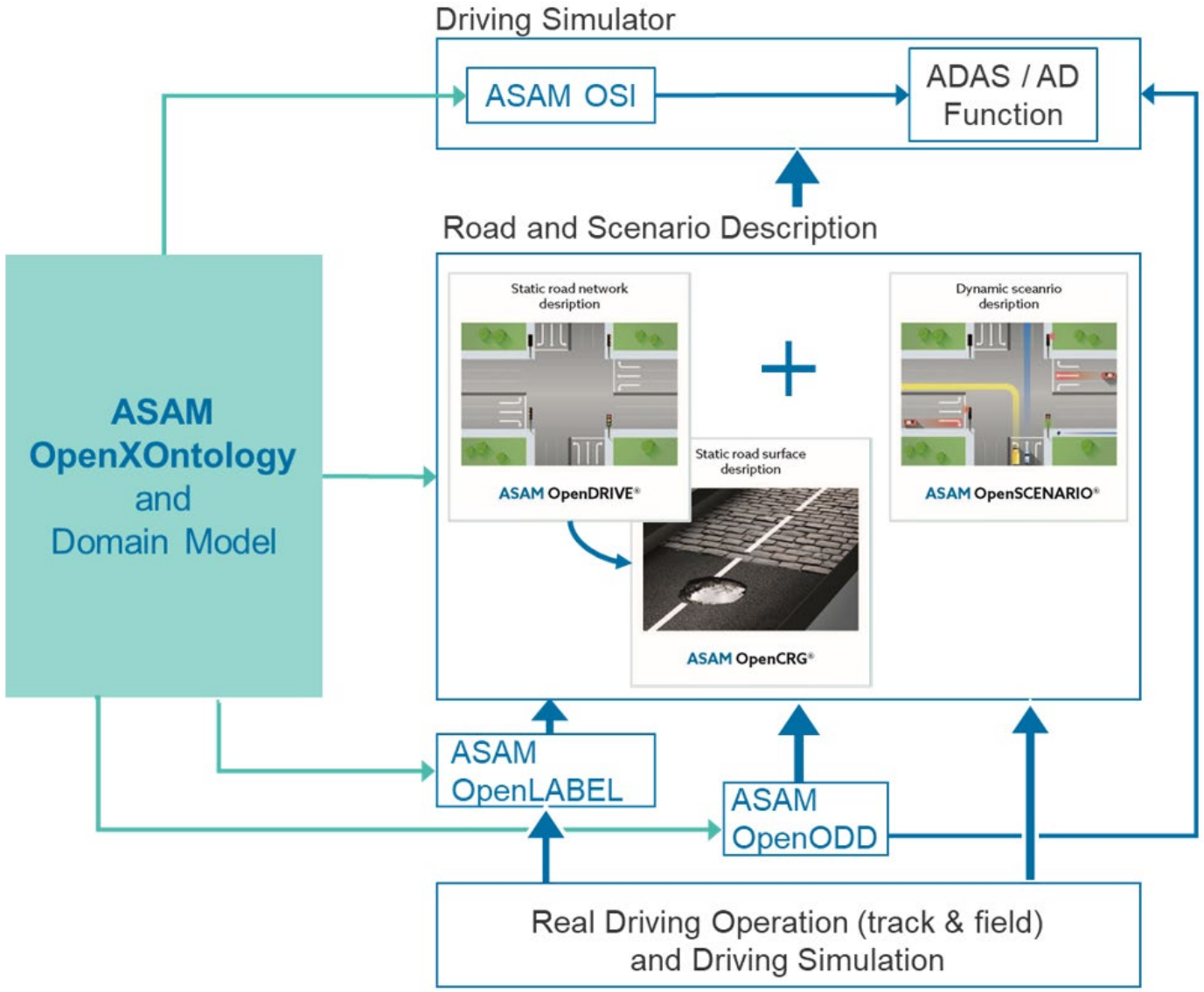
Static road surface description



ASAM OpenCRG®

The OpenX Standards are exchange formats for Simulations.
Describing different parts of a simulated scenario.
Each standard can be used stand alone or in combination with other standards.

ASAM Open X Standard Overview



Status of the OpenX projects

Done projects: OpenDRIVE 1.6.0, OpenSCENARIO 1.0.0, OpenSCENARIO 2.0.0 Concept

OpenDRIVE Concept: Ongoing project and the development phase finished in August 2020.

OpenLABEL Concept: started since April 2020.

OpenSCENARIO 1.x: started since June 2020.
OpenSCENARIO 2.0: started since June 2020.
OSI 1.0: started since June 2020.
OpenX Ontology: since June 2020.

OpenODD: A proposal workshop is scheduled in June 29, 2020. It will be started August 2020.

Participation of Japanese members (without OpenDRIVE concept)

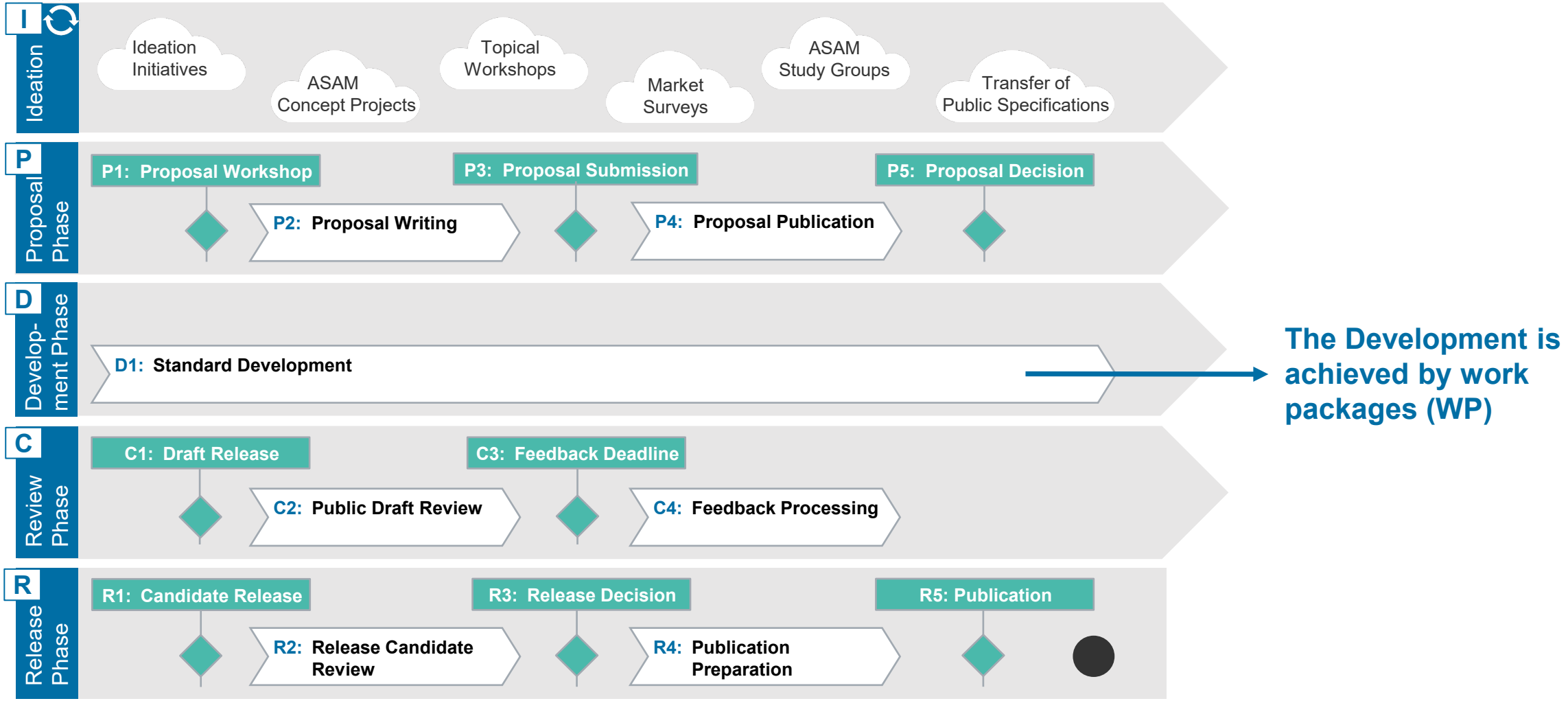
OpenLABEL Concept: Three members

OpenSCENARIO 2.0: Seven members

OSI: Four members

OpenX Ontology: Two members

ASAM Development Process for Standards



The Development is achieved by work packages (WP)

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ASAM OpenDRIVE Concept Project

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OpenDRIVE concept: Project Motivation & Expected Results

OpenDRIVE Concept Project	
Motivation / State of the Art	**Expectation / Beyond State of the Art**
- *Junction modeling is too complex with a big specification effort* - *Complex junctions described by 'tricky' modeling styles* - *Junction overlapping if group of simple junctions are modeled* - *Many redundant parameters*	***WP01*** ***Junction Model Optimization***
- *Missing road network environment* - *Missing reference to an external 3D environment model*	***WP02*** ***Environment Representation in ODR***
- *Geometry elements absolute positioning is not enough (extension about relative positioning)* - *Road geometry model extension about polylines, detailed lane model, etc.*	***WP03*** ***Road Geometry Models Optimization***
- *Missing traffic signs for simulation of ADAS/AD scenarios* - *Model should consider country specific signs*	***WP04*** ***International Signs Model Definition***
- *Modeling of the real-world road networks effective as possible* - *Make ODR interoperable with other (world) description formats* - *Use established technologies and solutions like GIS database*	***WP05*** ***Area Concept Model Definition***

Overview of WP04: International Signs model

Participants: Seven companies participate. Mitsubishi Precision is a leader of WP04.

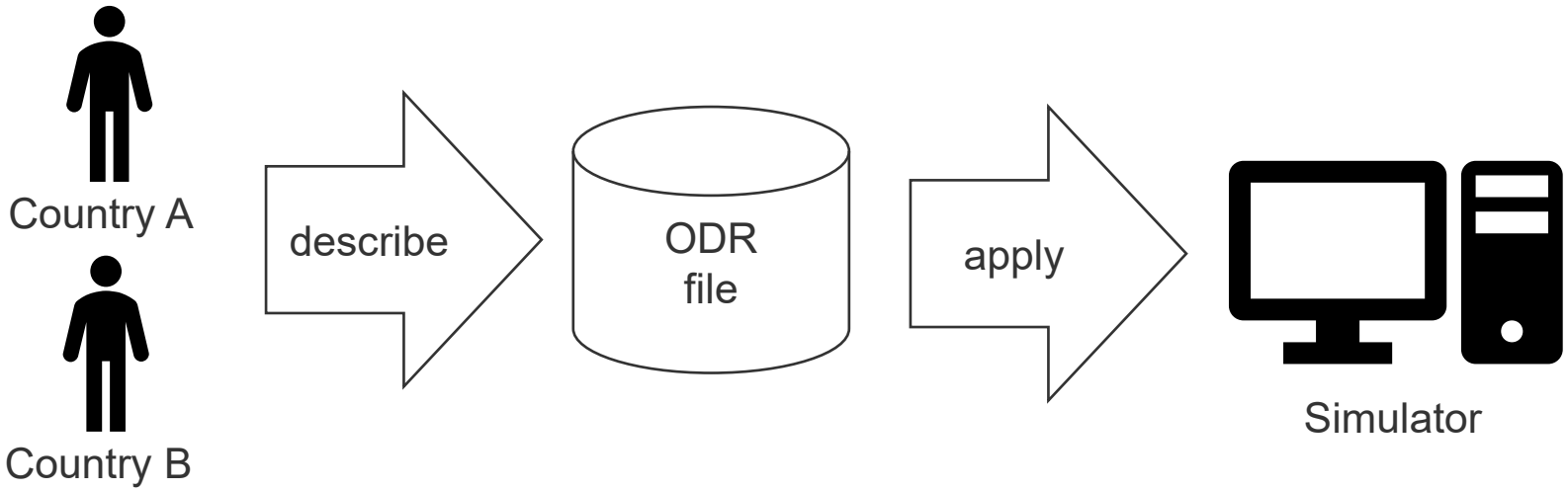
Goal: Description of concept paper for the international signs model

Meeting style:

WP04 meeting is held every month in person or by remote.
WP leaders meeting is held every month by remote.
Project member meeting is held every two month in person or by remote.

The use case for international description

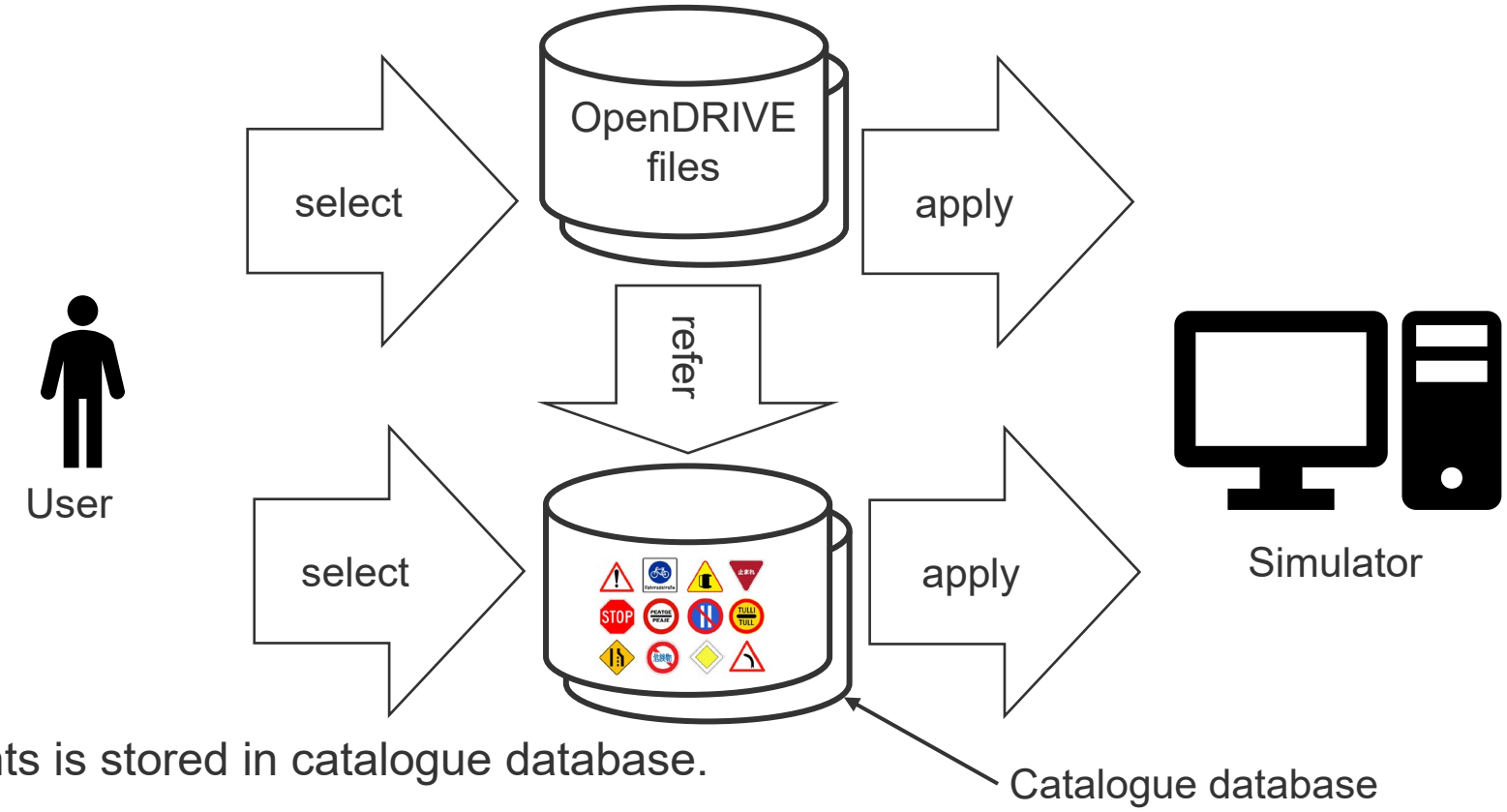
- The international signs for every country are described in OpenDRIVE file.
- Each year of enactment of the international signs are described in OpenDRIVE file.



The use case for selection of OpenDRIVE related contents

Use case and architecture

- Appearance of the graphic referred from OpenDRIVE files is selected.
- Appearance and additional contents is selected for purpose of simulation.
  Example: The sign and its graphic are used for camera sensor simulation.



- The contents is stored in catalogue database.

Scope of WP04: International Signs model

What is included:

- Road signs and sign of **road surface** are included.
- Road information sign is included.
  Note: It is estimated that all variations of road information sign are sorted to one modeled sign.
- Variable road signs are included.
- **Traffic lights** are included.

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Concept paper of WP04: International Signs model

Concept A: Scope of the traffic sign model

Scope of the international signs model is described.

Concept B: International Signs Model

Use case of the international signs model and the attributes are described.

Concept C: logical data and physical data for International Traffic Signs Model

Two use case for Logical data and Physical data are described.

Concept D: The Catalogue database referenced from the OpenDRIVE file

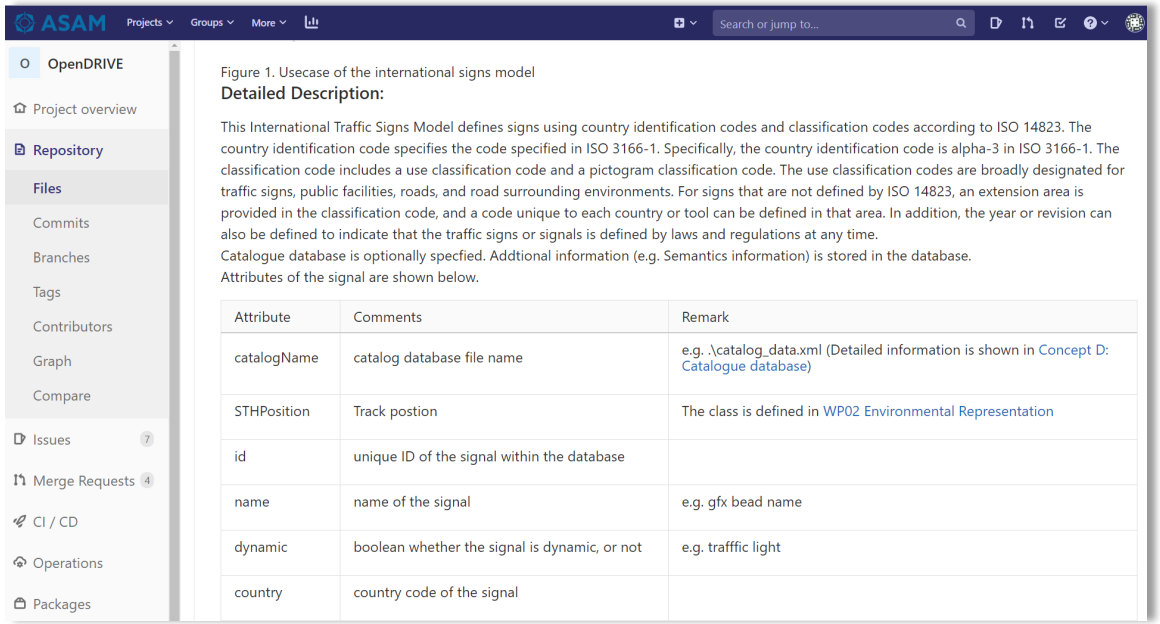
Use case of the catalogue database and its attributes are described.

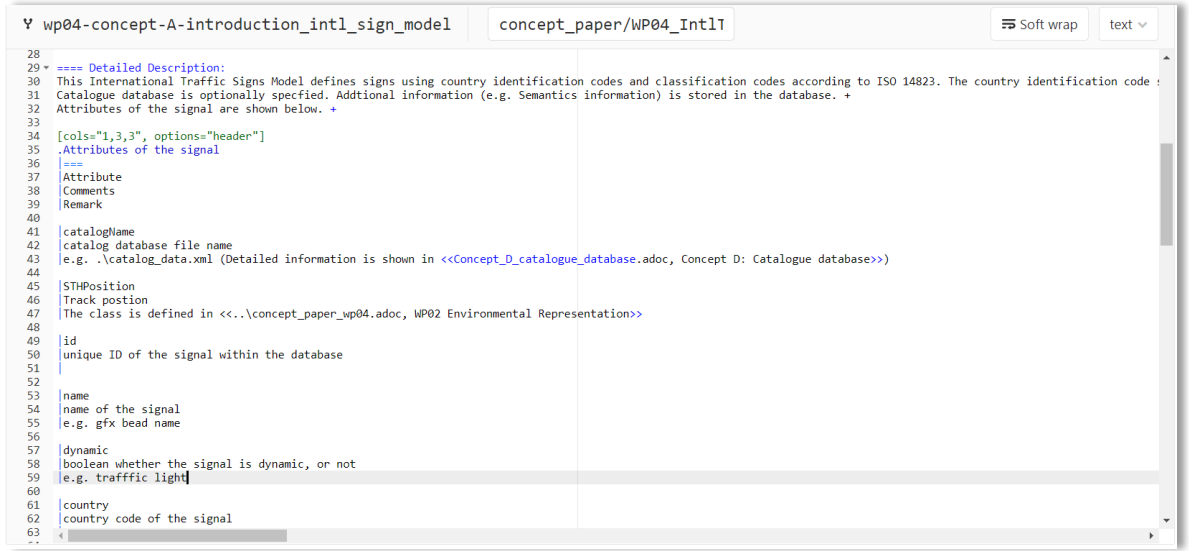
Concept E: Semantics for Sign Models

Semantics feature model is described by existing international signs.

Implementation of Concept paper: GitLab and ASCIIDOC

- GitLAB is used for document sharing and revision control, instead of SVN
- ASCIIDOC (.adoc) is used for description of concept paper on GitLAB, instead of WORD document.
- It works for cooperative description in parallel. Parallel description and merging are possible.

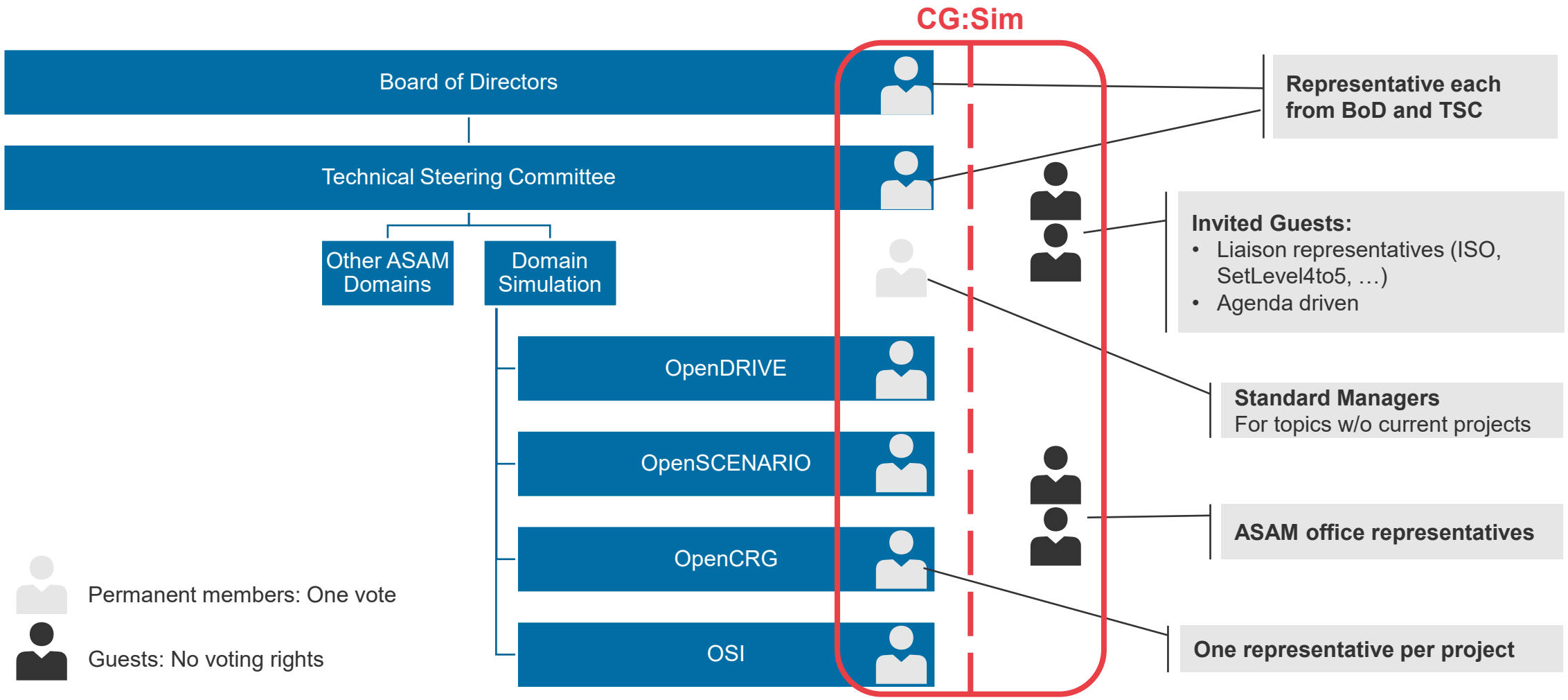




ASAM OpenX Coodination

Coordination Group: Simulation

Setup



OpenDRIVE and Expected synchronization

OpenDRIVE and the other OpenX standards will be synchronized for achievement of consistent system.
Example: Data model of OpenDRIVE will be managed by OpenSCENARIO.

From OpenDRIVE concept project point of view, the below points are synchronized in instance.

WP04 Intranational signs model and WP02 Environmental Representation:

- Data model of geometry and transportation/position is defined in WP02. The signs model refer the data model in WP02.

OpenDRIVE and OpenLABEL:

- Any data model of object (includes the sins model) in OpenDRIVE will be synchronized for OpenLABEL data model.

OpenDRIVE and OpenX Ontology:

- OpenX Ontology is defined by contents of OpenDRIVE

OpenDRIVE and OpenODD:

- How OpenODD relates OpenDRIVE is defined.

Summary

- Japanese members take one workplaces and contribute a part of the concept paper.
- It is a new style for ASAM international project.
- We have earned a new participation style of ASAM project from international point of view.
- The participant just join a work package. Knowledge and contribution will be linked and expanded to the project and any other OpenX projects.