

OPEN SIMULATION INTERFACE.

INTRODUCTION AND OVERVIEW.

**BMW
GROUP**

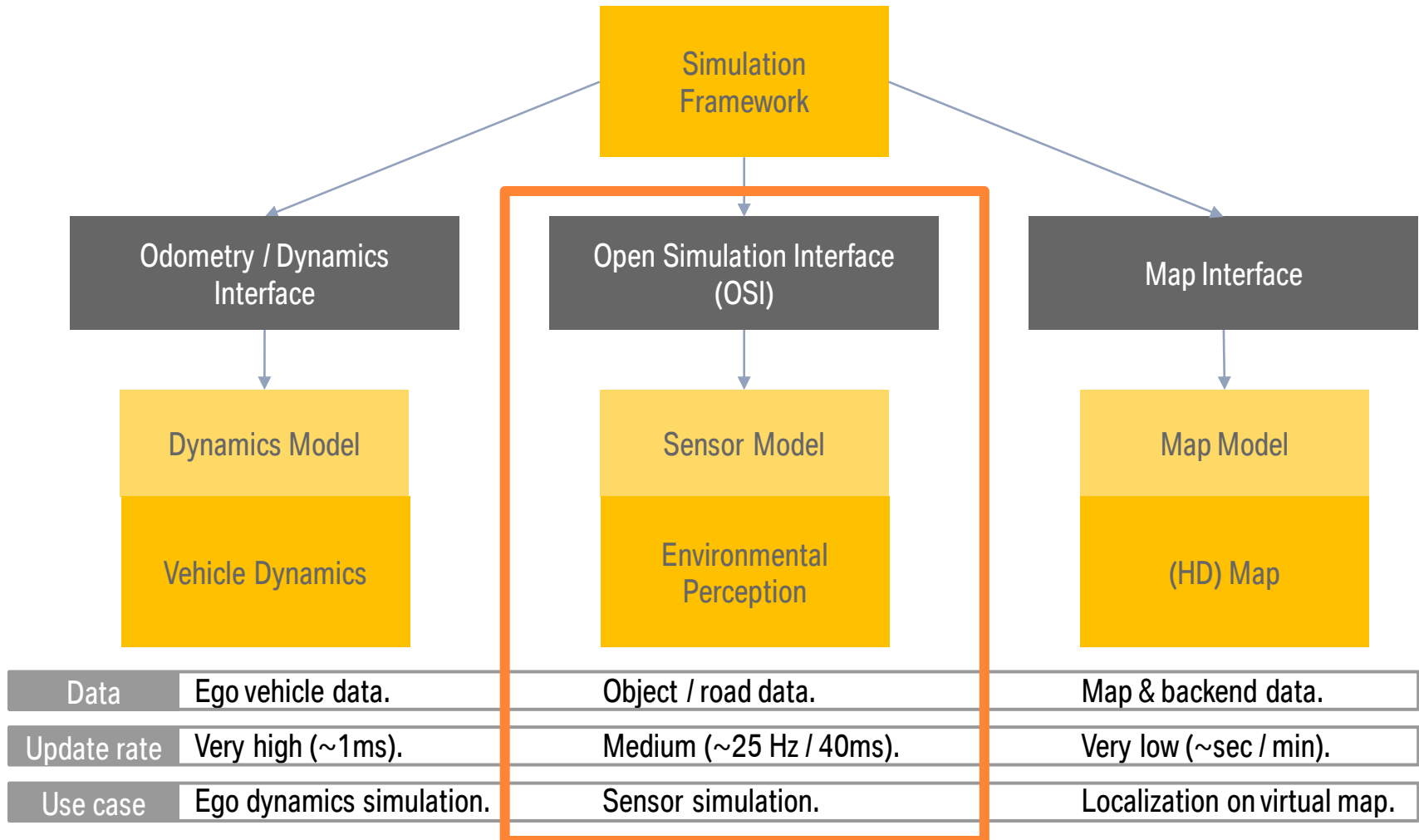
THE NEXT
100 YEARS



TUM



DIFFERENTIATION OF SIMULATION DATA INTERFACES.



OPEN SIMULATION INTERFACE.

Open Simulation Interface

- Consists of two individual interfaces (entry points) for object data.
- Implementation based on protocol buffers library.



osi::GroundTruth

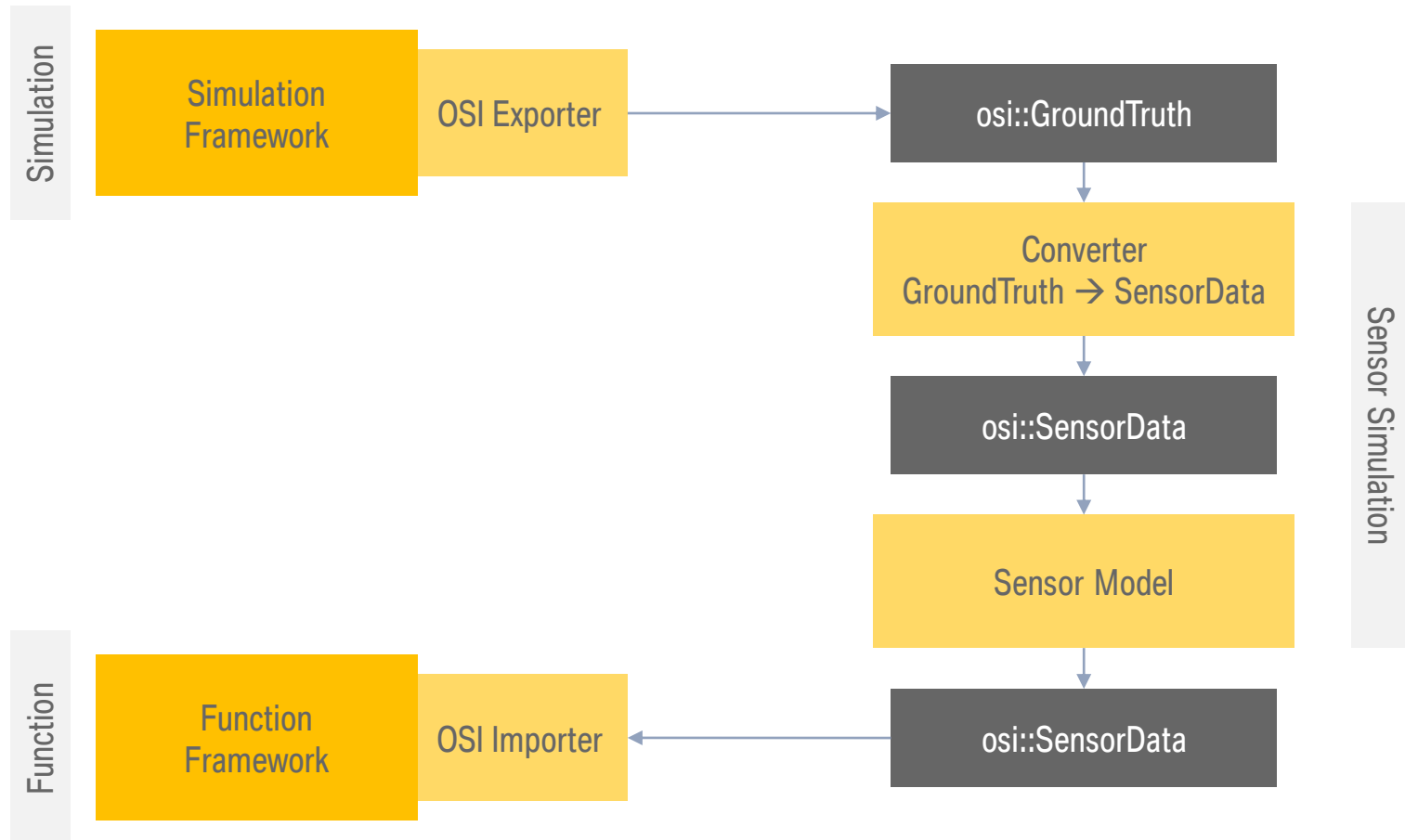
- Generic object output of the simulation framework.
- World / global reference frame.
- Comprehensive description of the virtual environment including all relevant object data required by statistical sensor models.



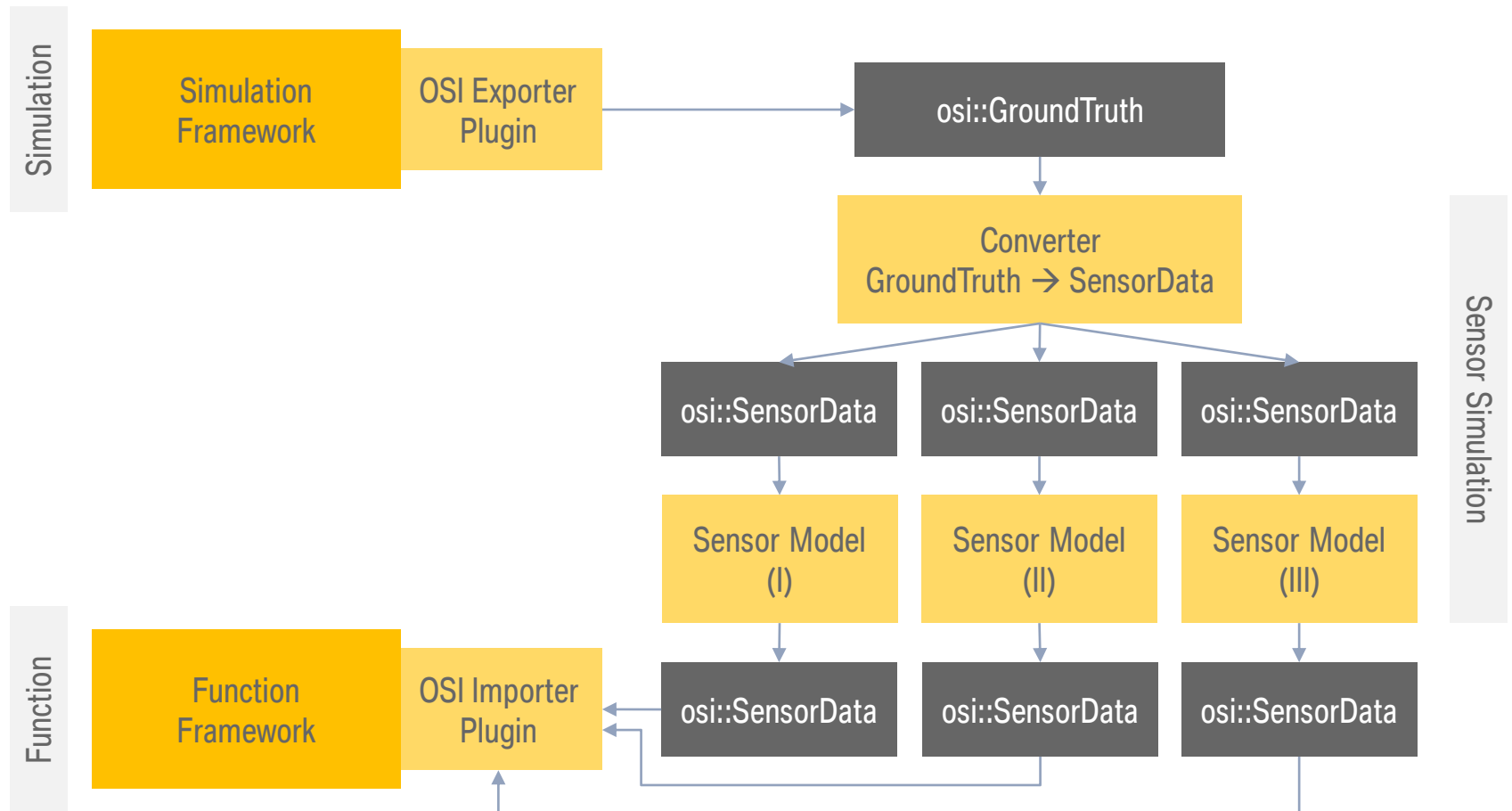
osi::SensorData

- Direct input and output of statistical sensor model(s).
- Input for the environment model.
- Sensor reference frame.
- Description of the sensor output including uncertainties.

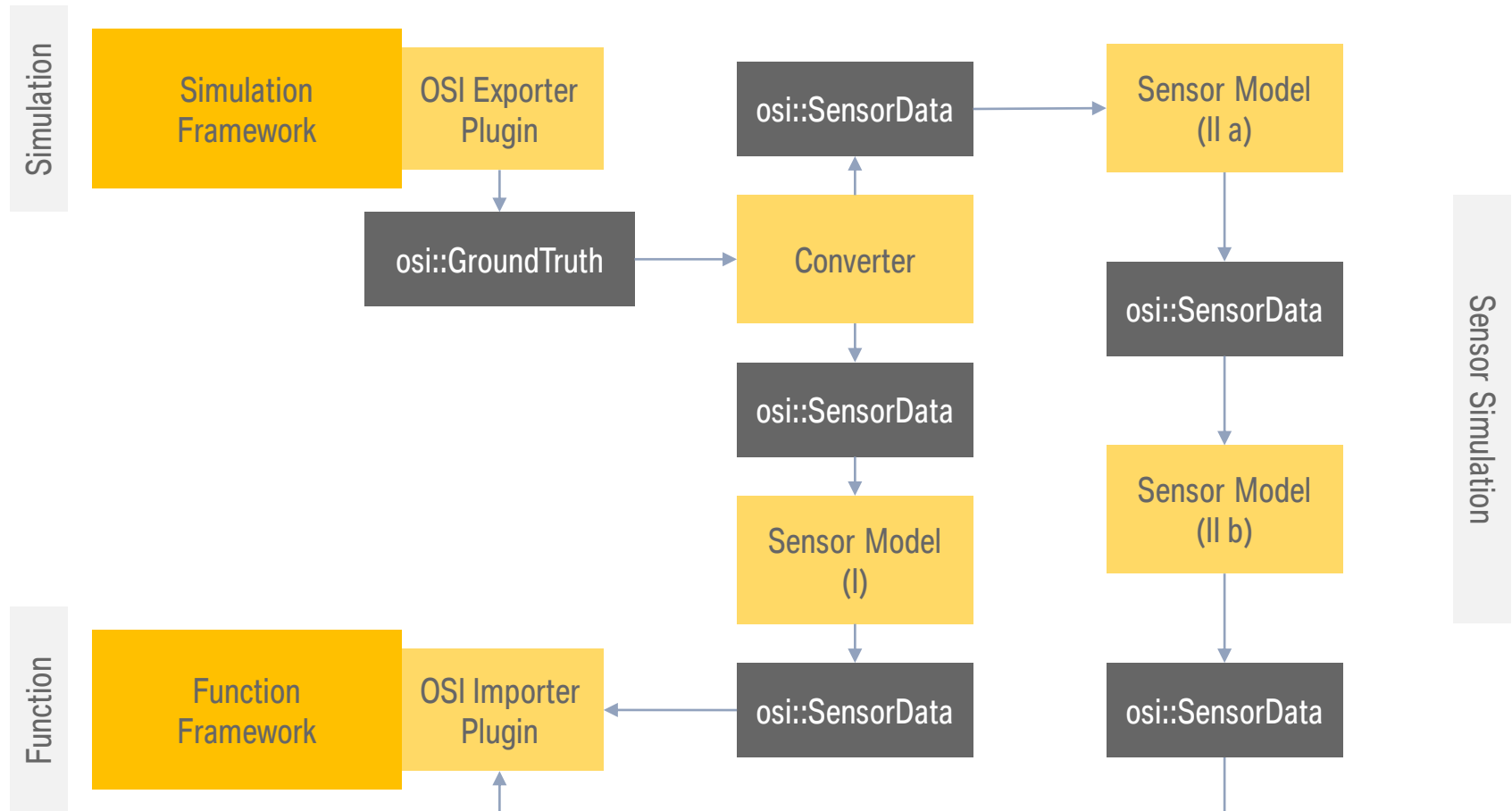
DATA FLOW USING THE OPEN SIMULATION INTERFACE.



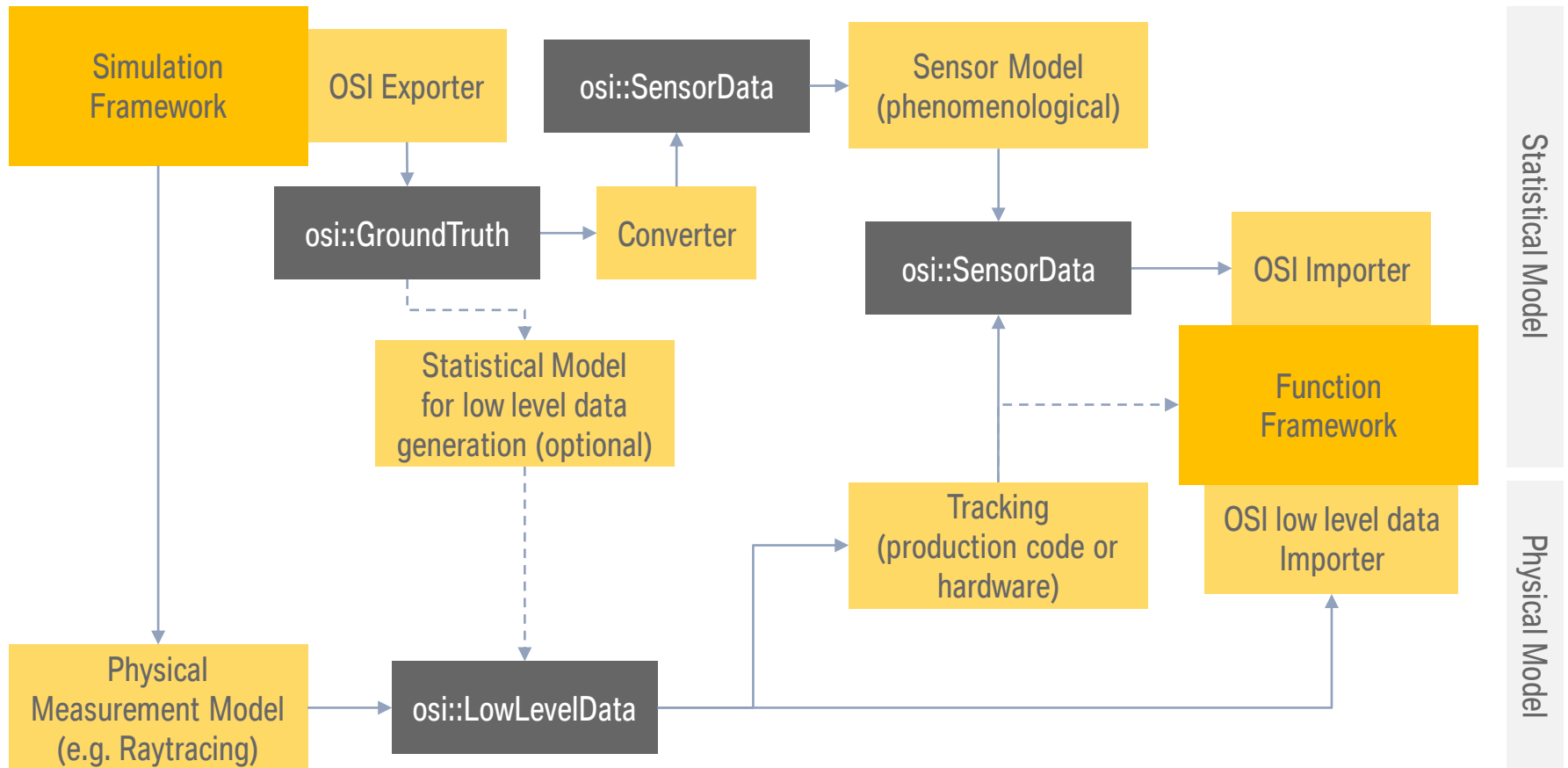
DATA FLOW USING THE OPEN SIMULATION INTERFACE WITH MULTIPLE SENSOR MODELS.



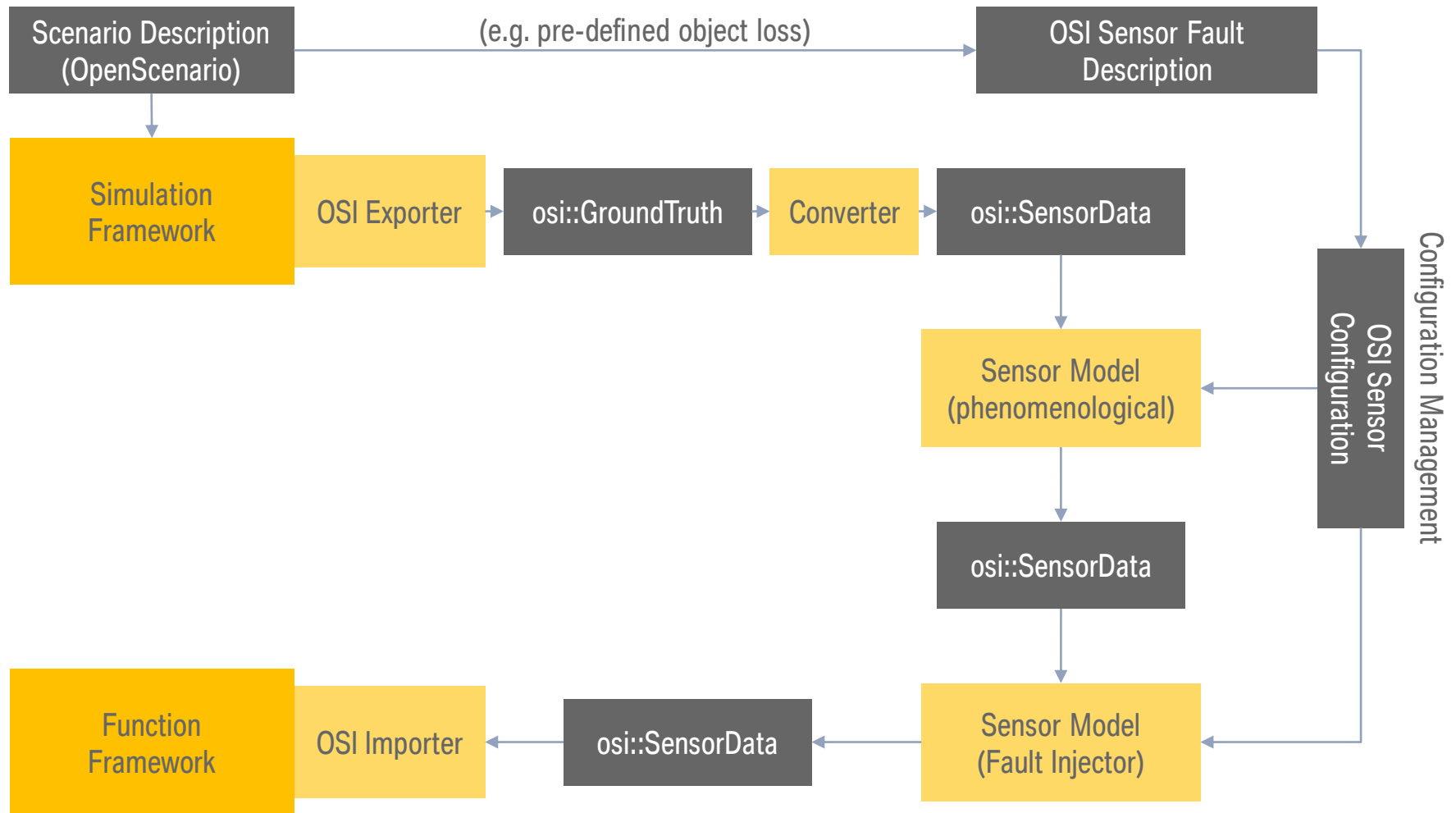
DATA FLOW USING THE OPEN SIMULATION INTERFACE WITH A SEQUENCE OF (PARTIAL) MODELS.



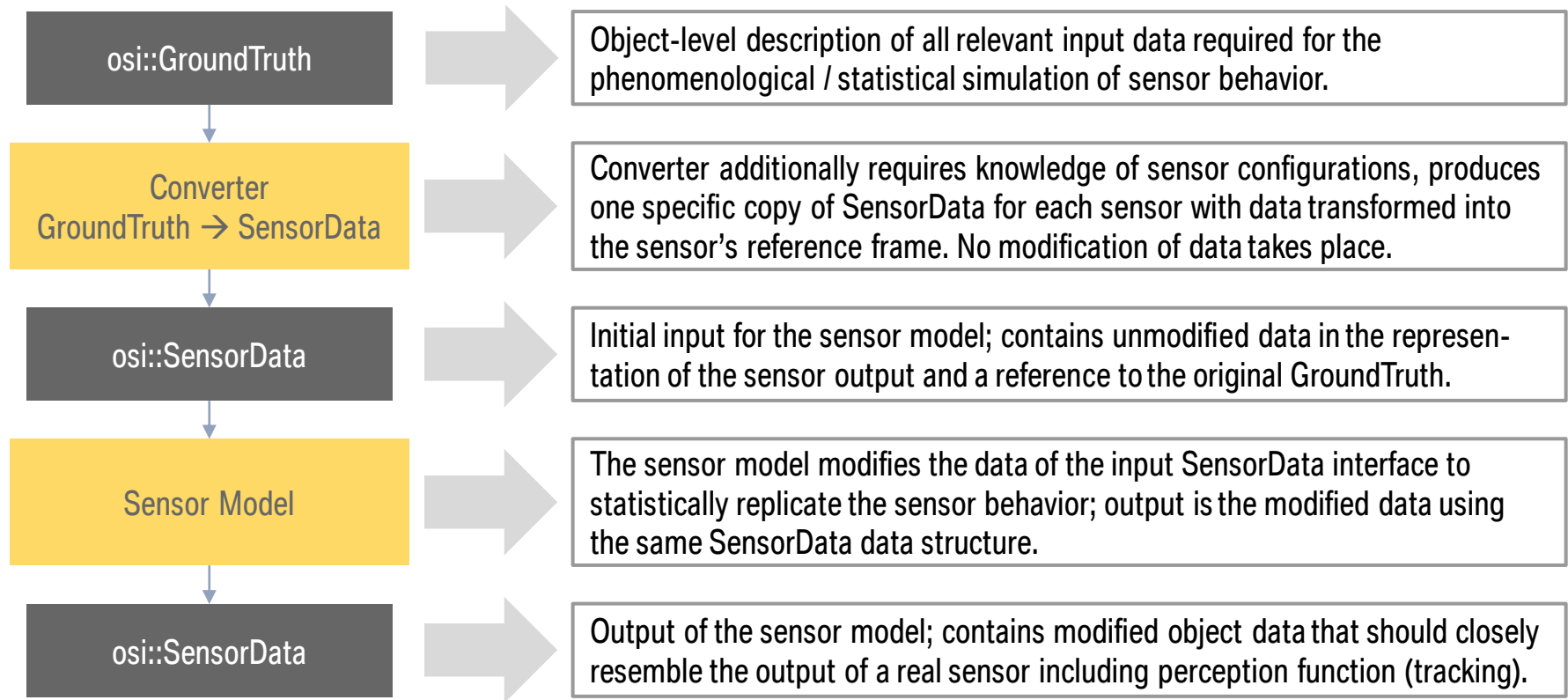
DATA FLOW IN SIMULATION FOR STATISTICAL AND PHYSICAL SENSOR MODELS.



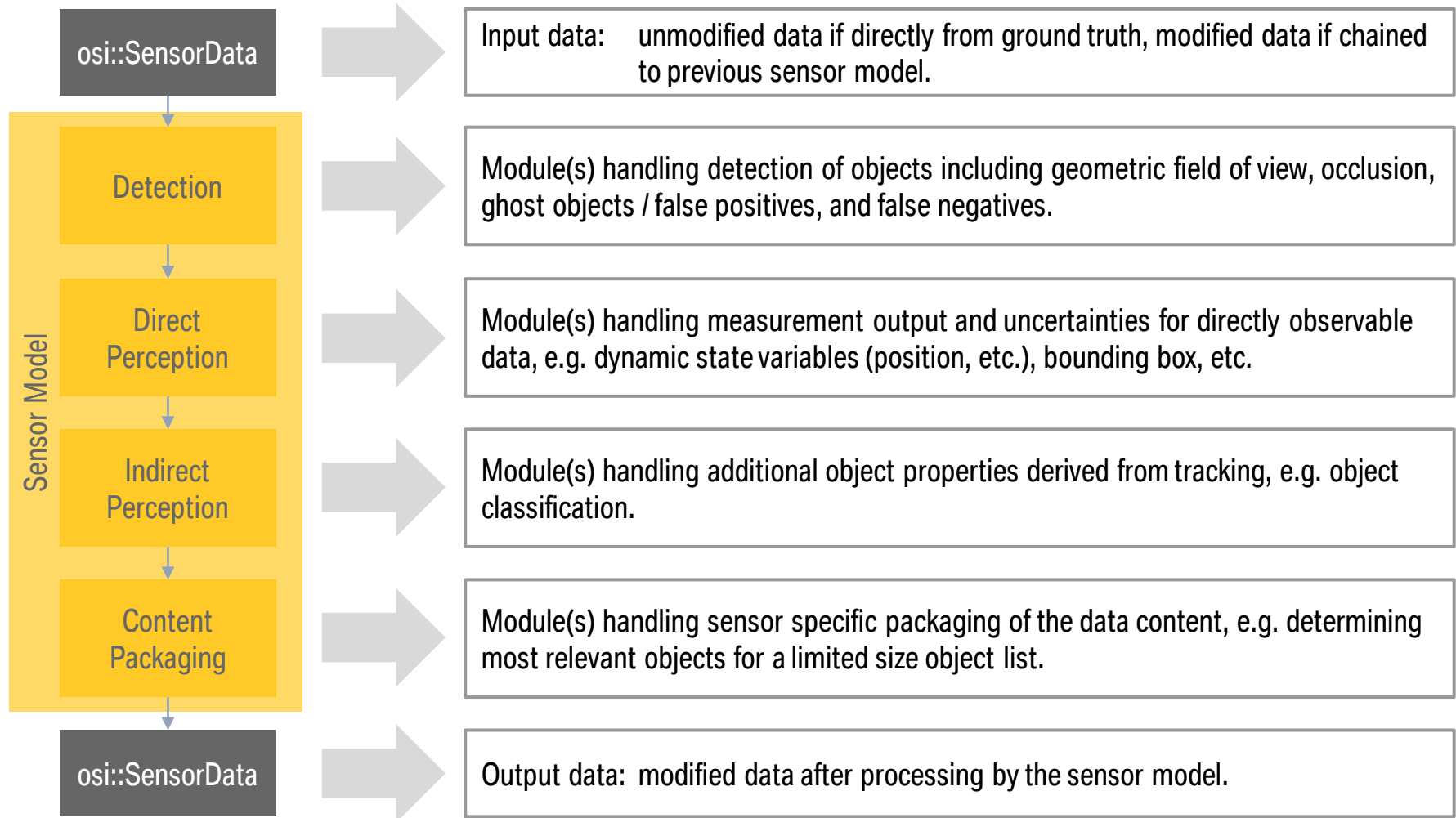
SIMULATION OF SPECIFIC ERROR PATTERNS USING FAULT INJECTION (OPTIONAL).



SENSOR MODEL PROCESSING CHAIN.

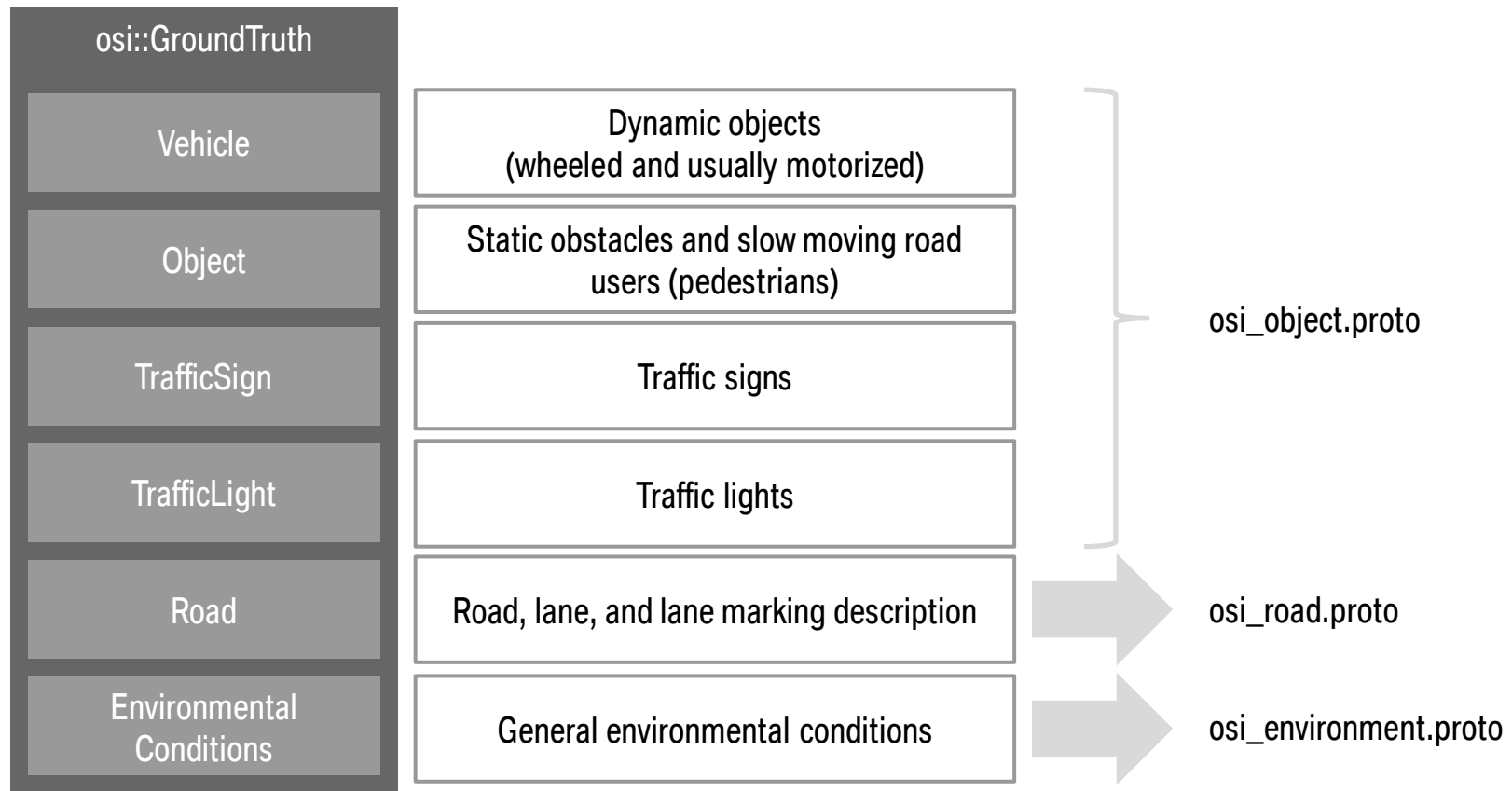


EXEMPLARY INTERNAL ARCHITECTURE FOR STATISTICAL SENSOR MODELS.



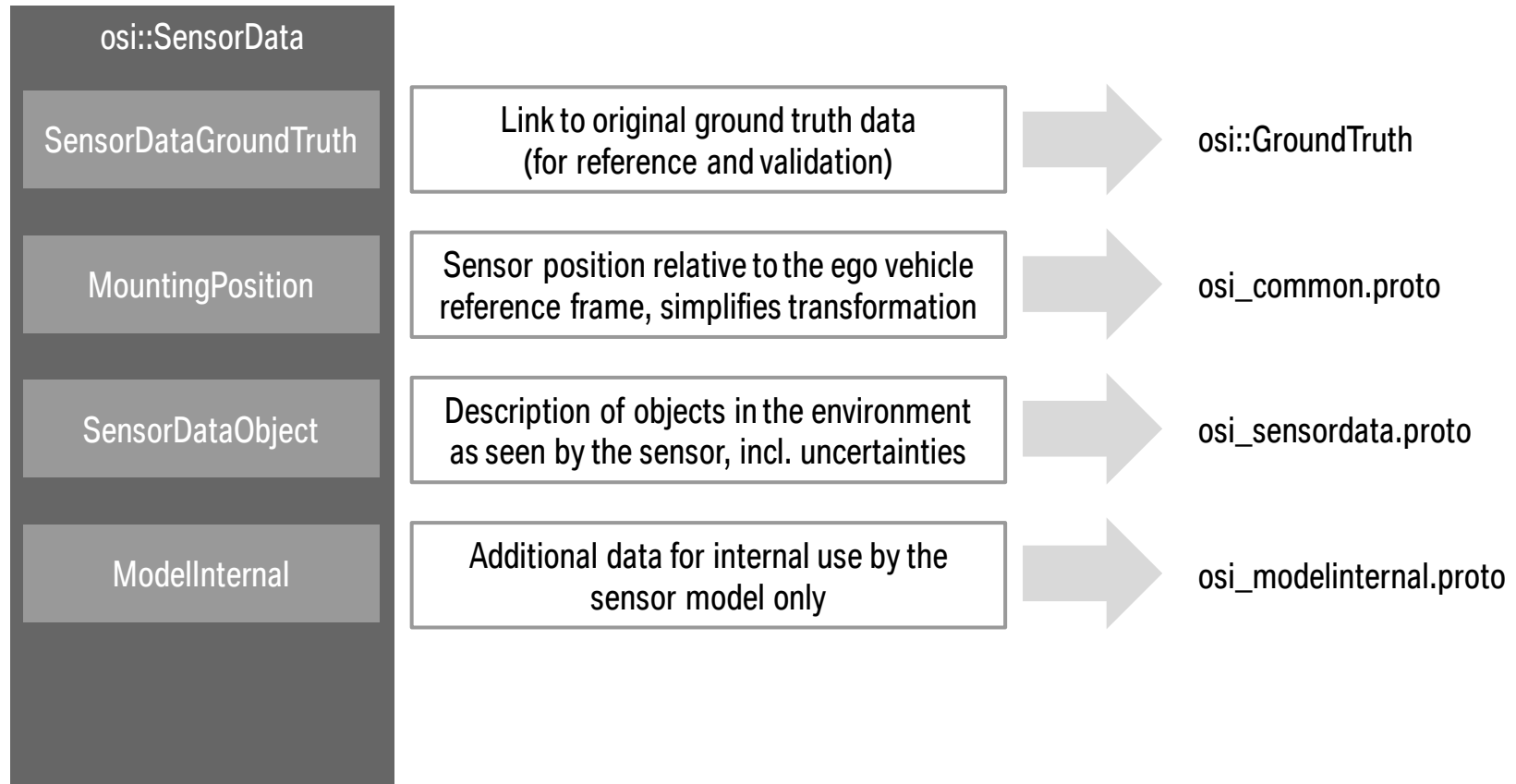
OSI::GROUNDTRUTH DESCRIPTION.

GroundTruth contains unmodified object data describing the environment of the ego vehicle as required for phenomenological / statistical sensor models in world coordinates.



OSI::SENSORDATA DESCRIPTION.

SensorData describes the object data in the environment relative to one specific sensor.



OSI::LOWLEVELDATA DESCRIPTION.

LowLevelData describes the output of a (physical) model of the measurement process before tracking and object hypothesis. Only this message does not deal with object data.

