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Additional Resources

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| Editor | Stefan Rude |
| Additional experts | Smart Systems Engineering Group ¹ |
| Short Description/ Transmitted Information | <ul style="list-style-type: none"> The Open Simulation Interface (OSI) defines an interface for the interconnection between the simulation environment and the automated driving functions in virtual scenarios |
| Application Scope | <ul style="list-style-type: none"> Simulation based Engineering and Testing of automated driving functions, virtual and scenario based testing, sensor and environment simulation |
| Maturity | <ul style="list-style-type: none"> Automotive-specific shaping |
| Goals | <ul style="list-style-type: none"> Connect any automated driving function to any driving simulator, simplify and improve virtual testing |
| Penetration | <ul style="list-style-type: none"> Individual expert teams |
| Visibility | <ul style="list-style-type: none"> Approximately 10% |
| Promoting Bodies | <ul style="list-style-type: none"> Projects of the PEGASUS family (PEGASUS, VVMethoden, SET Level), VDA Leitinitiative, ASAM, referenced in some ISO standards |
| Type | <ul style="list-style-type: none"> ASAM standard (work-in-progress) |
| IT Standard Classification | <ul style="list-style-type: none"> Interoperability Standard, Integration Standard |
| Data Format | <ul style="list-style-type: none"> OSI uses the message format by Googles protocol buffers for structuring data |
| Relations to other standards | <ul style="list-style-type: none"> ASAM OpenScenario, OpenDRIVE MODELICA FMI 3.0 ISO 23150 (standard for sensor output) |

¹ <https://intranet.prostep.org/display/PROJ/Smart+Systems+Engineering>

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| Overlap with other standards | <ul style="list-style-type: none"> not known |
| Available accompanying documentation (Software vendors) | <ul style="list-style-type: none"> https://github.com/OpenSimulationInterface/open-simulation-interface OSI Github |
| Available accompanying documentation (Industry Users) | <ul style="list-style-type: none"> van Driesten, 2018: Overall Approach to standardize AD Sensor Interfaces, Simulation and Real Vehicle, Springer Verlag |
| Available accompanying documentation (Management) | <ul style="list-style-type: none"> https://www.hot.ei.tum.de/forschung/automotive-veroeffentlichungen/ Research Reprot at TUM |

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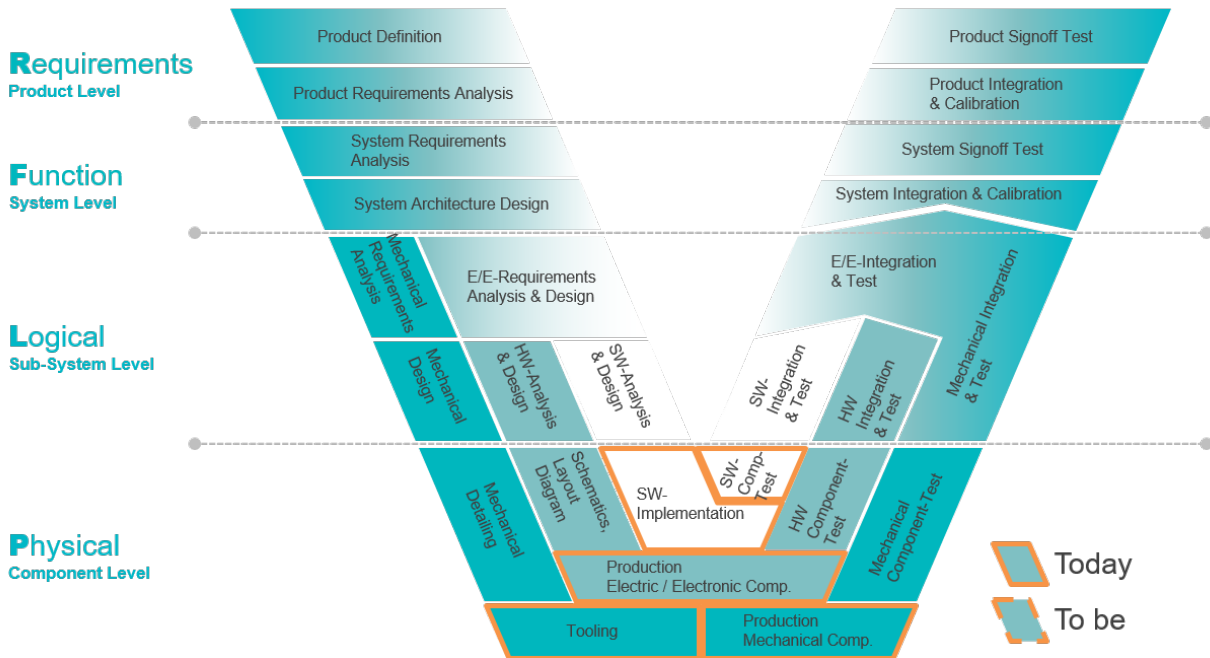
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- The Open Simulation Interface (OSI) defines an interface for the connection between the simulation environment and the automated driving functions in virtual scenarios.
- Version 3.1.2 released Jan. 2019 of OSI was published as an Open Source Project on Github and was transferred to the ASAM association. The current version from ASAM is 3.2.0.
- OSI uses the message format by Google's protocol buffers for structuring data
- One message for the simulation environment interface (osi::GroundTruth), which describe the simulated objects in a global coordinate system
- OSI since V3.0 distinguishes between Sensor View (osi::SensorView) and Sensor Data (osi::SensorData) as input and output of a sensor
- Application areas are
 - o automated and autonomous driving
 - o virtual scenarios based testing
 - o sensor and environment simulation
- Sensor data and ISO 23150 are harmonized. ISO 23150 is the standard for sensor output
- Actual developments standardise e.g. commands for the control of further traffic participants within traffic scenarios (osi::TrafficCommand and osi::TrafficUpdate)

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Positioning of OSI in V-Model



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- Interoperability between Environmental Models, Scenarios, Systems under Test (SUT), and other Traffic Participants within simulations during runtime



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- Naming convention: always talk about Open Simulation Interface, the abbreviation OSI is already used for the ISO 7-layer-model of interprocess communication
- many stakeholders with different requirements
- dependance on protocol buffers which don't guarantee performance in different programming languages and in all application areas

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| Datei | Geändert |
|--|---|
|  image2020-9-3_15-26-2.png ² | Nov. 17, 2020 by Peter Tabbert ³ |
|  Positioning of OSI in V-Model.png ⁴ | gestern um 9:25 vorm. by Peter Tabbert ⁵ |

2 https://intranet.prostep.org/download/attachments/22806533/image2020-9-3_15-26-2.png?api=v2

3 <https://intranet.prostep.org/display/~petertabbert>

4 <https://intranet.prostep.org/download/attachments/22806533/Positioning%20of%20OSI%20in%20V-Model.png?api=v2>

5 <https://intranet.prostep.org/display/~petertabbert>