# MBSE using SSP and SysML for Collaborative Development: An Open-source ADAS Use Case

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**Abstract:**

With the help of MBSE (Model-Based Systems Engineering), development and validation of ADAS (Advanced Driver Assistance Systems) can be planned and implemented in a structured and consistent manner across collaboration partners and departments.

The consistent use of standards supports this approach: Based on a requirement formulated using the ReqIF (Requirements Interchange Format) standard, the ADAS architecture can be specified using the SysML (Systems Modeling Language) standard.

Corresponding standards are also available for the planning and implementation of tests at component level in this context, particularly for simulation-based test environments (SiL, Software in the Loop): The SSP standard (System Structure and Parameterization) defines systems of simulation models and their parameterization. The integration and coupling of corresponding models are defined by the FMI (Functional Mock-up Interface) standard. However, the question remains open as to how specifications at the requirements level can be transferred into concrete system architectures for the execution of tests at the component level.

This presentation addresses this question and describes a suitable procedure using open-source, royalty-free specifications, and software artifacts: Based on the requirements of UNECE Regulation No. 157 - Automated Lane Keeping Systems (ALKS), a system architecture is defined that results in the implementation of an automated test using freely available simulation frameworks and models.