WHEEL BRAKE SYSTEM MODEL ANALYSIS USING OSATE

Type: Type 2
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Background: Software for mission-and safety-critical systems, such as avionics systems in aircraft, is growing larger and more expensive. The Architecture Analysis and Design Language (AADL) addresses common problems in the development of these systems, such as mismatched assumptions about the physical system, computer hardware, software, and their interactions that can result in system problems detected too late in the development lifecycle. The Architecture Analysis & Design Language (AADL) supports software architects and developers in the predictable model-based engineering of real-time and embedded computer systems. OSATE is an open-source tool platform to support AADL. In this environment, software architects can design and analyze models and then generate parts of the implementation code.

The AADL standard:
- gives you the power to specify and generate a single model that can be analyzed for multiple qualities
- provides an industry-standard, textual and graphic notation with precise semantics to model applications and execution platforms
- features an XML interchange format that supports the exchange of models between subcontractors, integrators, and agencies
- includes a UML profile that presents AADL as a specialized modeling notation within UML framework
- is supported by commercial and open-source tool solutions.

Project:

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In our project, we are analyzing Wheel Brake System Model using OSATE. Here, we are using AADL (Architecture Analysis and Design Language) which is used to design and analyze software and hardware architecture of real-time systems and their performance-critical characteristics and describe structure of systems, inputs and outputs, and performance timing. This Model-Based Safety Analysis, an approach in which the system and safety engineers share a common system model created using a model-based development process. We believe that by using a common model for both system and safety engineering and automating parts of the safety analysis, we can both reduce the cost and improve the quality of the safety analysis. By using OSATE we compute the information about the model. Here we present our vision of model-based safety analysis and discuss the advantages and challenges in making this approach practical.