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Complex system openended top-level modeling drivened by meta object facility

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Abstract

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In order to describe top-level model in different development stages, tools and departments for the development of complex system more accurately, a novel openended top-level modeling method for complex system is proposed. Based on the facility of Meta modeling framework, SysML is profiled by basic stereotype and Simulink stereotype. In top-level modeling, the complex system is divided into static structure model, dynamic behavior model and the interaction between them. The formal definition of each abstract model is discussed and the integration of various structure models is realized. Take a flight control system of unmanned aerial vehicle as an example, the system is modeled uniformly based on top-level model and the higher-level abstraction of those isomerous models in complex system is implemented. The experimental results validate the effectiveness of the proposed modeling method.

Author keywords

Complex system; Meta object facility; Model integration; SysML profile; Top-level modeling

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