

Model-Based Development for Affordable and Reliable Space Craft and Launch Vehicle by Utilizing Multi-Physics System-Level Modeling and Simulation Tool-Chain

Kaname Kawatsu

Japan Aerospace Exploration Agency (JAXA)

Model-based approaches toward risk assessment and design evaluation, aiming to realize affordable and reliable space systems such as spacecraft and launch vehicles, and to support the challenge of a trial study on advanced health management technology for affordable maintenance cost and system robustness have been constructed and adapted in several applications at JAXA. These approaches are realized by utilizing multi-physics system-level modeling and simulation with a toolchain based on SimulationX.

This toolchain consists of a framework for parametric studies and optimization, a Python language data-science scheme, and several physics domain simulation tools that support the Functional Mockup Interface (FMI) standards.