Introduction of Evolutional Verification and Validation Environment in JAXA

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JAXA is now developing Evolutional Verification and Validation Environment (EVVE) in order to perform Software Independent Verification and Validation (IV&V) more effectively and efficiently throughout software development phases.

In early development phase, the software to be verified can be represented by model. The model can get to be more detailed as the development phase proceeds without rebuilding the verification environment. In this phase, Static Model-Based IV&V method can be applied (e.g. model check, static simulation of data communication using interface models). Accordingly, software defects can be detected before implementation.

On the other hand, in later development phase, the verification environment can be evolved by replacing the model with the code. In this phase, Dynamic Model-Based IV&V method can be applied (e.g. dynamic simulation with hardware emulator, Hardware-In-the-Loop Simulation). Accordingly, more realistic verification can be performed.

One of the characteristic concepts of EVVE is reusability of models, especially in case of reuse development. It can increase cost-effectiveness of Software IV&V by making the modeling process easier. In addition, know-how of Software IV&V in past projects can be accumulated in the model and taken over to new projects.
In this presentation, the concept of EVVE is introduced and the effectiveness of EVVE is discussed.