

Realtime Embedded CORBA in Space

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As embedded computing technology advances, a more flexible, scalable, and reusable flight software architecture is being investigated to meet the need of the future spacecrafts. A testbed has been developed to evaluate the feasibility of using Common Object Request Broker Architecture (CORBA) as higher level framework for onboard embedded computing. Also discussed in this paper are many aspects of concerns such as software footprints, scheduling policies for deterministic realtime, transport policy in space, and standard interfaces for plug-and-play components.

Strict software engineering practice is being followed throughout the project to ensure software scalability and reusability. The Unified Modeling Language (UML) and proper tools are used to implement layered software architecture and modulized design. An architectural blueprint of a constellation of spacecrafts in the future is being mapped under this design. A new spacecraft operational concept is presented to improved and encourage onboard autonomy.