# A Modeling & Simulation Implementation Framework
# for Large-Scale Simulation

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## Abstract

Classical High Level Architecture (HLA) systems are facing development problems for lack of supporting fine-grained component integration and interoperation in large-scale complex simulation applications. To provide efficient methods of this issue, an extensible, reusable and composable simulation framework is proposed. To promote the reusability from coarse-grained federate to fine-grained components, this paper proposes a modelling & simulation framework which consists of component-based architecture, modelling methods, and simulation services to support and simplify the process of complex simulation application construction. Moreover, a standard process and simulation tools are developed to ensure the rapid and effective development of simulation application.

**Keywords:** simulation environment, HLA federate, component, system architecture

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