



IEEE Standard for Modeling and Simulation (M&S) High Level Architecture (HLA)— Federate Interface Specification

IEEE Computer Society

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Simulation Interoperability Standards Organization/
Standards Activities Committee (SISO/SAC)

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Abstract: The High Level Architecture (HLA) has been developed to provide a common architecture for distributed modeling and simulation. The HLA defines an integrated approach that provides a common framework for the interconnection of interacting simulations. This document, the second in a family of three related HLA documents, defines the standard services of and interfaces to the HLA runtime infrastructure (RTI). These services are used by the interacting simulations to achieve a coordinated exchange of information when they participate in a distributed federation. The standards contained in this architecture are interrelated and need to be considered as a product set, when changes are made. They each have value independently.

Keywords: architecture, class attribute, data distribution management, federate, federation, federation execution, federation object model, HLA, instance attribute, instance attribute ownership, interaction class, object class, runtime infrastructure, simulation object model, time-constrained, time-regulating

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Introduction

This introduction is not part of IEEE Std 1516.1-2010, IEEE Standard for Modeling and Simulation (M&S) High Level Architecture (HLA)—Federate Interface Specification.

This document has been developed to record an international standard for the High Level Architecture (HLA). It serves as one of three related standards for the HLA. It defines the services and interfaces to be used by federates when participating in a federation execution.

This new version of the IEEE 1516 HLA was produced in 2004 through 2007 by the HLA Evolved Product Development Group of the Simulation Interoperability Standards Organization (SISO). It incorporates a number of updates based on practical application of earlier versions of the standard. The purpose of the new version is to better support development, deployment, and net-centricity of distributed simulations.

Major new additions include support for Web Services communication, modular information models [federation object models (FOMs) and simulation object models (SOMs)], improved extensible markup language (XML) features (XML Schemata as well as extensibility), improved fault tolerance support, support for update rate reduction, and dynamic link compatibility between different implementations.

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^aAll RTI-initiated services are denoted with a † (printer's dagger) after the service name.

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IEEE Standard for Modeling and Simulation (M&S) High Level Architecture (HLA)— Federate Interface Specification

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1. Overview

1.1 Scope

This document defines the interface between federates (simulations, supporting utilities, or interfaces to live systems) and the underlying software services that support interfederate communication in a distributed simulation domain.

1.2 Purpose

The High Level Architecture (HLA) has been developed to provide a common architecture for distributed modeling and simulation (M&S). To facilitate interfederate communications, HLA federates interact with an underlying software infrastructure. This specification defines the standard services and interfaces to be used by the federates to support efficient information exchange when participating in a distributed federation execution. (A federation execution occurs when sets of federates are brought together to support an objective.)