

Trick High Level Architecture TrickHLA

Simulation and Graphics Branch (ER7)
Software, Robotics and Simulation Division
Engineering Directorate

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National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas

**Trick High Level Architecture
TrickHLA**

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Abstract

TrickHLA is a middleware model package that provides an interface framework for enabling IEEE-1516 High Level Architecture (HLA) capabilities in simulations developed in the Trick Simulation Environment. TrickHLA allows a developer to concentrate on simulation development without needing to be an HLA expert. The TrickHLA model is data driven and provides a simplified API making it relatively easy to take an existing Trick-based simulation and make it HLA capable.

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Chapter 1

Introduction

The objective of TrickHLA is to simplify the process of providing simulations built with the Trick Simulation Environment[6] with the ability to participate in distributed executions using the High Level Architecture (HLA)[11]. This allows a simulation developer to concentrate on the simulation and not have to be an HLA expert. TrickHLA is data driven and provides a simple API making it relatively easy to take an existing Trick simulation and make it HLA capable.

1.1 Identification of Document

This document provides a description of and an entry into the TrickHLAmiddleware model package. As described above, TrickHLA provides an interface framework between Trick-based simulations and HLA-based distributed simulation executions. This document adheres to the documentation standards defined in NASA Software Engineering Requirements Standard [5].

1.2 Scope of Document

This document is the top level document in a collection of documents that provide information on the following aspects of TrickHLA:

- requirements,
- algorithms and design,
- verification and validation, and
- use

This includes references to associated texts and standards.

1.3 Purpose and Objectives of Document

The purpose of this document is to provide a thorough understanding of the methods by which the TrickHLA was defined, programmed, and verified.

1.4 Documentation Status and Schedule

The information in this document is current with the TrickHLA v3.0.0 - Beta implementation of the TrickHLA modules. Updates will be kept current with module changes.

Author	Date	Description
Edwin Z. Crues	June 2020	TrickHLA Version 3

Revised by	Date	Description

1.5 Documentation Organization

This document is formatted in accordance with the NASA Software Engineering Requirements Standard [5] and is organized into the following chapters:

Chapter 1: Introduction - Identifies this document, defines the scope and purpose, present status, and provides a description of each major section.

Chapter 2: Related Documentation - Lists the related documentation that is applicable to this project.

Chapter 3: Product Requirements - Describes requirements for the TrickHLA.

Chapter 4: Product Specification - Describes the underlying theory, architecture, and design of the TrickHLA in detail.

Chapter 5: User Guide - Describes how to use the TrickHLA in a Trick simulation.

Chapter 6: Inspection, Verification, and Validation - Contains TrickHLA inspection, verification, and validation procedures and results.

Chapter 2

Related Documentation

2.1 Parent Documents

The following document is parent to this document:

- None

2.2 Applicable Documents

The following documents are referenced herein and are directly applicable to this document:

- *TrickHLA Product Requirements* [2]
- *TrickHLA Product Specification* [3]
- *TrickHLA User Guide* [4]
- *TrickHLA Inspection, Verification, and Validation* [1]

The following specific documents are applicable to this document:

- *IEEE Standard for Modeling and Simulation (M&S) High Level Architecture (HLS) - Federate Interface Specification* [10]
- *IEEE Standard for Modeling and Simulation (M&S) High Level Architecture (HLS) - Object Model Template (OMT) Specification* [12]

The following additional documents are applicable to this document:

- *Trick Simulation Environment: Installation Guide* [7]
- *Trick Simulation Environment: Tutorial* [8]

- *Trick Simulation Environment: Documentation* [6]
- *NASA Software Engineering Requirements* [5]

2.3 Information Documents

The following documents provide supporting material for understanding the concepts in this document:

- *IEEE Standard for Modeling and Simulation (M&S) High Level Architecture (HLA) - Framework and Rules* [11]
- *IEEE Recommended Practice for Distributed Simulation Engineering and Execution Process (DSEEP)* [9]

See the bibliography for the details associated with these references.

Chapter 3

Product Requirements

This section of the documentation has been rolled out into a [separate document](#) [2].

Chapter 4

Product Specification

This section of the documentation has been rolled out into a [separate document](#) [3].

Chapter 5

User Guide

This section of the documentation has been rolled out into a [separate document](#) [4].

Chapter 6

Inspection, Verification, and Validation

This section of the documentation has been rolled out into a [separate document](#) [1].

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