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Trick High Level Architecture MODEL Product Specification

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

Package Release TrickHLA v2.9.0

Document Revision 1.0
DATE

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

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Abstract

This is the abstract of the MODEL.

Contents

Chapter 1

Introduction

MODEL introduction.

1.1 Identification of Document

This document describes the design of the MODEL developed for use in the Trick Simulation Environment. This document adheres to the documentation standards defined in NASA Software Engineering Requirements Standard [**?**].

1.2 Scope of Document

This document provides information on the algorithms used in and the design of the source code associated with the MODEL. This include references to associated texts and the presentation of various equations for COMPLETE THIS SENTENCE.

1.3 Purpose and Objectives of Document

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

1.4 Documentation Status and Schedule

The information in this document is current with the TrickHLA v2.9.0 implementation of the MODEL. Updates will be kept current with module changes.

Author	**Date**	**Description**
YOUR NAME	DATE	Initial Version

Revised by	Date	Description

1.5 Document Contents

This document is organized into the following sections:

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

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

Chapter ??: Architectural Design - Presents the top-level concepts behind the MODEL.

Chapter ??: Mathematical Formulations - Presents the mathematical formulations implemented by the MODEL.

Chapter ??: Interface Design - Describes the MODEL data interfaces.

Chapter ??: Functional Design - Presents the detailed design of the model.

Chapter ??: Version Description - Identifies the configuration-managed items that comprise the MODEL.

Bibliography - Informational references associated with this document.

Appendix ??: Source Code - Lists the source code files that comprise the MODEL.

ADD OTHER APPENDICES IF ANY .

Chapter 2

Related Documentation

2.1 Parent Documents

The following documents are parent to this document:

- *Trick High Level Architecture ()* [**?**]
- *MODEL* [**?**]

2.2 Applicable Documents

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

- *MODEL Product Requirements* [**?**]
- *MODEL User Guide* [**?**]
- *MODEL Inspection, Verification, and Validation* [**?**]
- *The Trick User's Guide: Trick 2005.0 Release* [**?**]
- *Trick Simulation Environment: User Training Materials: Trick 2005.0 Release* [**?**]
- *Trick Simulation Environment: Version Description: Trick 2005.0 Release* [**?**]
- *The Trick Design Document: Trick 2005.0 Release* [**?**]
- *NASA Software Engineering Requirements* [**?**]

2.3 Information Documents

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

- *SUPPORTING REFERENCE* [**?**]

Chapter 3

Architectural Design

The architectural model for this software is as defined in, and required by, the Trick Simulation Environment. The reader is urged to examine references [**?**] and [**?**] for a thorough understanding of this programming environment.

3.1 Definition of the MODEL

3.1.1 Purpose and Scope

The MODEL is a collection of functions that COMPLETE THIS SENTENCE.

This module is not a stand-alone program; rather, it is designed to be incorporated into the Trick Simulation Environment, and applies to space vehicles or objects that are either docked to or undocked from one another. Primary user(s) of this software are simulation and model developers who wish to simulate spacecraft operations, including docking and undocking procedures under nominal and emergency scenarios.

3.1.2 Goals and Objectives

The goal of the MODEL is to COMPLETE THIS PARAGRAPH.

Chapter 4

Mathematical Formulations

FILL IN THIS SECTION. REFERENCE DOCUMENTS AS NEEDED. REPRODUCE KEY EQUATIONS USED IN THE SOURCE CODE. DO NOT DESCRIBE THE SOURCE CODE ITSELF YET, THAT COMES LATER.

Chapter 5

Interface Design

Trick simulations use enumerated types and data structures as the primary inter-job interface mechanism and for input and output processing.

5.1 Data Structure Design

This section describes the MODEL enumerated types and data structures.

CASE 1: MODEL HAS ONE HEADER FILE The *MODEL.h* file contains COMPLETE THIS SENTENCE. It contains the following enumerations and data structures:

ENUM1: An enumeration of the COMPLETE THIS FRAGMENT. ADD NECESSARY DETAILS.

ENUMn: An enumeration of the COMPLETE THIS FRAGMENT. ADD NECESSARY DETAILS.

STRUCT1: A data structure containing COMPLETE THIS FRAGMENT. ADD NECESSARY DETAILS.

STRUCTn: A data structure containing COMPLETE THIS FRAGMENT. ADD NECESSARY DETAILS.

CASE 2: MODEL HAS MULTIPLE HEADER FILE

This section describes the design of the data structures defined in that file.

The data structures used in conjunction with the MODEL are defined in the following files:

MODEL1.h - BRIEF SYNOPSIS OF MODEL1.h

MODELn.h - BRIEF SYNOPSIS OF MODELn.h

5.1.1 MODEL1.h

The *MODEL1.h* file contains COMPLETE THIS SENTENCE. It contains the following enumerations and data structures:

ENUM1: An enumeration of the COMPLETE THIS FRAGMENT. ADD NECESSARY DETAILS.

ENUMn: An enumeration of the COMPLETE THIS FRAGMENT. ADD NECESSARY DETAILS.

STRUCT1: A data structure containing COMPLETE THIS FRAGMENT. ADD NECESSARY DETAILS.

STRUCTn: A data structure containing COMPLETE THIS FRAGMENT. ADD NECESSARY DETAILS.

5.1.2 MODELn.h

REPEAT ABOVE.

5.2 Input Files

This section describes the default data files used to initialize the MODEL data structures.

FILL IN THIS SECTION.

Chapter 6

Functional Design

SAMPLE ONLY - ASSUMES MODEL_init.c and MODEL.c

This section describes the functions that implement the MODEL.

These functions are defined in

`MODEL_init.c` - Initializes model.

`MODEL.c` - Updates model.

6.1 `MODEL_init.c`

6.1.1 Design

DESCRIBE THE DESIGN OF THIS FILE. REFERENCE ANY MATH MODELS DESCRIBED IN chapter **??** THAT ARE USED IN THIS FUNCTION. CAPTURE HIGH-LEVEL CONCEPTS THAT ARE NOT IN THE TRICK HEADER.

6.1.2 Trick header

6.1.3 Requirements Traceability

ENUMERATE THE REQUIREMENTS SPECIFIED IN THE REQUIREMENTS DOCUMENT THAT THIS FUNCTION SATISFIES.

Chapter 7

Version Description

This section identifies the versions of the MODEL described in the current release of the MODEL documentation.

7.1 Inventory

The following items comprise the complete configuration-managed inventory of the MODEL:

LIST ALL FILES ASSOCIATED WITH THE MODEL THAT ARE IN THE RAZOR DATABASE.

7.2 Change Status

This is the basic implementation of the software suite. A change status is not provided.

7.3 Adaptation Data

This is the first release (basic version) of the MODEL software suite. No adaptation data is appropriate or is provided, as the user will define the ab initio data structures at initialization time.

Appendix A

Source Code

INCLUDE ALL .H, .D, and .C files ASSOCIATED WITH THE MODEL. PRECEDE EACH UNDERSCORE IN A SUBSECTION LINE WITH A BACKSLASH.

A.1 C Header Files

A.1.1 `MODEL.h`

A.2 Data Files

A.2.1 `MODEL.d`

A.3 C Source Files

A.3.1 `MODEL.c`