SISO-STD-025-2023

Cyber Data Exchange Model (DEM)

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Revision History

Version	Section	Date (MM/DD/YYY)	Description
Draft 1	All	2023	Draft at the beginning of comment round 2
Draft 2	Dates	09/22/2023	Balloted version
Version 1	Approval Dates	12/18/2023	Added SAC and EXCOM approval dates and explanation of UMLet file extension

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1 INTRODUCTION

The Cyber DEM represents cyber events and objects in a format independent of simulation interoperability solutions, but which is unambiguously translatable to those solutions. The Cyber DEM provides the common representation of these cyberspace conditions so they can be transmitted bi-directionally between cyber ranges, cyber simulations, and the LVC environments supported by traditional kinetic simulation.

1.1 Purpose

This document provides the content required by the SISO Style Guide. The technical content of the standard is provided in Cyber DEM Objects, SISO-STD-025.1-2023, and Cyber DEM Events, SISO-STD-025.2-2023. Guidance on applying the Cyber DEM can be found in Cyber DEM Base Objects, Networks, Effects, & Specifications (BONES).

1.2 Scope

There is limited capability to incorporate realistic cyber events, attacks, effects, and responses into LVC environments because traditional kinetic simulations and cyber ranges are not well integrated. The lack of integration limits the incorporation of realistic cyberspace conditions, created within cyber ranges, into the operational systems and simulations that form the test environment or training environment. As a result, systems under test cannot be tested under the conditions in which they will operate, nor are warfighters able to be trained under the conditions in which they will fight.

The lack of integration can be overcome through a mechanism that provides a common syntax and semantics for transferring information between kinetic environments and cyber ranges and satisfies information assurance requirements. The Cyber DEM provides the common representation of these cyberspace conditions so they can be transmitted bi-directionally between cyber ranges and the LVC environments supported by traditional kinetic simulation.

1.3 Objectives

The Cyber DEM is somewhat analogous to SISO's Real-time Platform Reference Federation Object Model (RPR FOM) for cyber events and objects vs kinetic ones. These cyber events and objects are designed to support the broadest range of use cases known at its time of development across all communities supported by simulation. It is also intended to support use cases foreseeable in the near future.

1.4 Intended Audience

Potential Cyber DEM users are the intended audience for this document.

1.5 Acknowledgments

At the time this product was submitted to the Standards Activity Committee (SAC) for approval, the Cyber DEM PDG had the following membership and was assigned the following SAC Technical Area Director:

Dr. Katherine L. Morse (Chair)

Dr. Ed Powell (Vice-Chair)

Dr. Fuzzy Wells (Secretary and SAC Technical Area Director)

Dr. Curtis Blais

Bert Boltjes

Jordan Dauble

Tim Friest

Allen Geddes

Cristian Gheorghiu

Rotem Guttman

Dr. Omar Hasan

Sara Meyer

Ivar Oswalt

David Ronnfeldt

John Rutledge

Kevin Seavey

Tom van den Berg

Jeffrey Welch

2 REFERENCES

2.1 SISO Documents

The following SISO documents were used in generating this document. When the following documents are superseded by an approved revision and that causes a conflict with this document, the revision of the below-referenced documents shall supersede this document. These documents are available through the SISO web site at https://www.sisostandards.org/.

Document Number	Title
SISO-REF-072-2020	Cyber Data Exchange Model (DEM) reference product
SISO-PN-025-2020	Cyber Data Exchange Model (DEM) product nomination
SISO-REF-072-2023	Cyber DEM Base Objects, Networks, Effects, & Specifications (BONES)
SISO-STD-025.1-2023	Cyber DEM Objects[1]
SISO-STD-025.2-2023	Cyber DEM Events[1]

2.2 Other Documents

N/A

3 DEFINITIONS

N/A

4 ACRONYMS AND ABBREVIATIONS

Acronym/Abbr	Definition
BONES	Base Objects, Networks, Effects, & Specifications
DEM	Data Exchange Model
FOM	Federation Object Model
RPR	Real-time Platform Reference FOM

[1]The Cyber DEM Objects and Events models were built with the open source UMLet tool (https://www.umlet.com/). UMLet produces files with the extension .uxf. At the date of publication of the Cyber DEM standard, SISO's IT infrastructure doesn't support uploading of documents with this extension. The .uxf files have been zipped and may need to be unzipped before using the UMLet tool.

Acronym/Abbr	Definition
SAC	Standards Activity Committee
SISO	Simulation Interoperability Standards Organization
XML	Extensible Markup Language