

ISO/IEC JTC 1/SC 24

Computer graphics, image processing and environmental data representation

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Simulation Interoperability Standards Organization (SISO)

Liaison Report to

ISO/IEC JTC 1/SC 24

22-26 August 2016, Beijing, China

Prepared by SISO Standards Activity Committee

The SISO Standards Activity Committee (SAC) provides oversight for the development and coordination of all SISO Products (Standards, Guidance and Reference Products) to support interoperability and reuse in the M&S community, and is the SISO committee that coordinates with SC 24. Current and former SISO members continue to be active in the work of SC 24, and the key and relevant activities within SISO in the last 12 months are highlighted in this report.

SISO's development activities are conducted in Study Groups (SG), Standing Study Groups (SSG), Product Development Groups (PDG), Product Support Groups (PSG), and Special Working Groups (SWG). The SGs/SSGs are formed to evaluate the viability for developing a new product; PDGs perform the development tasks; PSGs provide post-publication support for products. The SWGs develop and maintain reference products that apply across SISO groups. The number of these groups and their areas of focus can vary over time. The current list of groups and the list of current SISO products are provided at the end for reference. The reader will also find a list of the standards that SISO has published and supports at the end of this report.

SISO maintains and cultivates liaisons and various agreements with other standards development organizations. This past year SISO and the Open Geospatial Consortium (OGC) began collaborating on a cooperative agreement. SISO, OGC, and United States Geospatial Intelligence Foundation (USGIF) have been working to place greater emphasis on open standards to advance the M&S mission. SISO and OGC are co-convening a one-day summit meeting on September 19, 2016 in Orlando, Florida. The goal of the summit is to involve experts from the M&S and geospatial communities to discuss the current state of the art, to develop a roadmap to help further the integration and interoperability of geospatial and M&S technologies, and to guide the organizations collectively towards greater levels of coordinated standards-based interoperability. Additional information related to the 3D Geospatial M&S Summit is found at: https://portal.opengeospatial.org/public_ogc/register/3dms.php.

Several SISO groups perform work that is closely relevant to the work of SC 24. These are the Special Working Group Reference for Enumerations for Simulation (SWG Enumerations),

the Common Image Generator Interface (CIGI) PSG, the Environmental Data Representation Standards (EDRS) PSG and the Reuse and Interoperation of Environmental Data and Processes (RIEDP) PDG.

The **SWG Enumerations** publishes, maintains, supports, and updates the *Enumerations for Simulation Interoperability* Reference Product. This allows identifying and defining entities, as well as other objects and effects, which may be used in simulations. Many of these require graphics and/or geospatial representation. The product of the SWG specifies numerical values and associated definitions for fields that are identified as enumerations in SISO Standards Products and SISO-sponsored standards published by IEEE for High Level Architecture (HLA) and Distributed Interactive Simulation (DIS). Enumerations for simulations may be applied in other architectures, such as the Test and Training Enabling Architecture (TENA).

The **CIGI PSG** supports the *SISO-STD-013-2011, Standard for the Common Image Generator Interface*. The CIGI standard provides interoperability across real-time image generator (IG) and host computational systems through a common communication protocol that enables visualization tools to quickly interface with other subsystems. The standard also provides for vendor-specific communications when there is no commonly available communication mechanism. The standard is used for any visual situational awareness activity, including real-time out-the-window, sensor simulations, briefing or debriefing station, instructor operator station, scenario planning tool, etc.

The **EDRS PSG** participates in activities that support the development, extension, refinement, and maintenance of standards that affect SISO's environmental data community. The PSG maintains liaison with the ISO/IEC JTC 1/SC 24 WG 8, the SEDRIS Organization, and the broader community of environmental data representation users and practitioners. The EDRS PSG also publishes the *ER in the News*, which highlights and reports on key environmental representation events and news from the broader community.

The EDRS PDG is also updating its Terms of Reference (TOR). The relevant specific tasks include:

1. In collaboration with the SAC, maintain liaison for the support of the ISO/IEC family of SEDRIS Standards and their associated registries with:
 - International Organization for Standardization (ISO) / International Electrotechnical Commission (IEC) Joint Technical Committee (JTC) 1 / Subcommittee (SC) 24 / Working Group (WG) 8 Environmental Representation
 - SEDRIS Organization (<http://sedris.org/>)
2. In support of the SAC as Liaison to ISO/IEC JTC1/SC24, make technical contributions to and participate actively in the work of WG 8.

3. Coordinate with the SAC to conduct SISO Community Reviews of selected ISO/IEC JTC1/SC 24 Working Drafts, resolve SISO comments, and provide to the SAC by established deadlines.
4. Become and remain cognizant of other organized efforts (both internal and external to SISO) that are addressing related / relevant ER standards and practices. Maintain liaison with those organizations for the purpose of expressing interest in their efforts and findings, potential collaborations, and in sharing the SISO work.
5. Establish and maintain liaison with other related organizations for situational awareness and coordination in further development, modification and application of ER standards.

The **RIEDP PDG** promotes reusability of environmental database generation efforts and fosters interoperability between simulation systems through a standardized understanding of both their environmental data products and generation processes. The focus is on the harmonization of environmental database generation processes, and the means to exchange such generated data, at various points in the process, after the source data collection stage but before the runtime/proprietary database creation stage. The RIEDP focus includes retention of the data form (or format) as close to the source data as possible throughout the data generation process in order to benefit from GIS tools and any intrinsic correlation factor they may provide. The RIEDP objective is also to eliminate application specific constraints from the scope of environmental data interchange standard.

The RIEDP PDG continues the development of the following two SISO Products:

- 1) The *RIEDP Data Model Foundations*, which will be a SISO Guidance Product; and
- 2) The *RIEDP Detailed Features Description*, which will be a SISO Standard Product.

The RIEDP PDG has made significant progress on the RIEDP Data Model Foundations product. An informal review of the document is in progress, and the PDG will be releasing the document for a formal ballot once the informal review is complete. A RIEDP PDG presentation will be made at the 2016 WG 8 meetings, in which the status of the RIEDP PDG and the broader application of RIEDP development efforts will be highlighted.

In addition to the work of these groups that closely relate to the work of SC 24, other relevant and significant activities in the last 12 months within SISO include:

- Approval of eight new SISO products (the updated list following this report highlights the new products).
- Formation of the new “Exploration of Next Generation Technology Applications to Modeling and Simulation (ENGTAM)” Study Group, “Human Performance Markup Language” Product Development Group (PDG), “Distributed Interactive Simulation

(DIS)” Product Support Group (PSG), and “High Level Architecture-Evolved (HLA-Evolved)” PDG.

- Change in the name of annual SISO workshops from Simulation Interoperability Workshops to Simulation Innovation Workshop.

Additional information on these groups and, and all other SISO activities can be found at the SISO web site: <http://sisostds.org>.

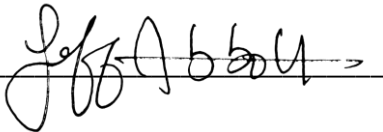
To ensure the cooperative efforts between SISO and SC 24 continue successfully, the SISO SAC established processes and procedures to further its SC 24 liaison responsibilities. The SISO SAC has established a public product coordination email list for use in requesting comments on ISO/IEC standards under review:

<https://discussions.sisostds.org/index.htm?A0=SAC-PRODUCT-COORDINATION&X=C0C6144F97154AD137>

The procedures build upon existing SISO structures and clarify how those structures apply to our liaison role with SC 24. These procedures align with Section 3 of ISO’s “Guidance for ISO liaison organizations; Engaging stakeholders and building consensus.”

SISO and SISO SAC look forward to the continued successful cooperation with ISO/IEC JTC 1/SC 24 and to mutual contributions to the development of standards by both organizations.

Sincerely,



Date: August 23, 2016

Jeff Abbott

Chair, SISO Standards Activity Committee

Table 1 – SISO Groups

#	Acronym	Group Title	PDG	PSG	SG/SSG	SWG
1.	ACQ M&S	Acquisition Modeling & Simulation	X			
2.	BOM	Base Object Model		X		
3.	C2SIM	Command and Control Systems – Simulation Systems Interoperation	X	X		
4.	CIGI	Common Image Generator Interface		X		
5.	CMSD	Core Manufacturing Simulation Data		X		
6.	DDCA	Distributed Debrief Control Architecture	X			
7.	DIS / RPR FOM	Distributed Interactive Simulation		X		
8.	DSEEP/DMAO	Distributed Simulation Engineering and Execution Process		X*		
9.	EDRS	Environmental Data Representation Standards		X		
10.	ENGTAM	Exploration of Next Generation Technology Application to Modeling and Simulation			X*	
11.	ENUM	Enumerations for Simulation				X
12.	EPLRS/SADL	Enhanced Position Location Reporting System including Situational Awareness Data Link Simulation Standard	X			
13.	FEAT	Federation Engineering Agreements Template		X		
14.	GDACL	Gateway Description and Configuration Languages	X			
15.	GSD	Guideline on Scenario Development	X			
16.	HLA	High Level Architecture-Evolved	X*	X		
17.	HPML	Human Performance Markup Language	X*			
18.	Link 11	Link 11 A/B Network Simulation Standard	X			
19.	PR/CR	Problem Report / Change Request				X
20.	RIEDP	Reuse and Interoperability of Environmental Data and Processes	X			
21.	SRFOM	Space Reference Federation Object Model	X			
22.	SRML	Simulation Reference Markup Language	X			
23.	TADIL TALES	Tactical Digital Information Link-Technical Advice and Lexicon for Enabling Simulation		X		

#	Acronym	Group Title	PDG	PSG	SG/SSG	SWG
24.	UCATT	Urban Combat Advanced Training Technologies	X			
25.	VV&A	Verification, Validation, and Accreditation/Acceptance Products		X		
26.	WebLVC	Web Live, Virtual and Constructive	X			
27.	XML Schema	XML Schema Naming and Design Rules				X

* New SISO Groups

Table 2 – Standards, Guidance and Reference Products Developed and/or Supported by SISO

#	Standards, Guidance, and Reference Products	Product Type	Standards Organization
SISO-SPONSORED AND DEVELOPED IEEE STANDARDS			
1.	IEEE Std 1278.1™-2012, IEEE Standard for Distributed Interactive Simulation - Application Protocols (a revision of IEEE Std 1278.1™-1995 and IEEE Std 1278.1a™-1998)	Standard	IEEE
2.	IEEE Std 1278.2™-2015, IEEE Standard for Distributed Interactive Simulation (DIS) - Communication Services and Profiles (a revision of IEEE Std 1278.2™-1995)	Standard	IEEE
3.	IEEE Std 1278.4™-1997, IEEE Recommended Practice for Distributed Interactive Simulation - Verification, Validation, and Accreditation	Standard	IEEE
4.	IEEE Std 1516™-2010, IEEE Standard for Modeling and Simulation High Level Architecture — Framework and Rules	Standard	IEEE
5.	IEEE Std 1516.1™-2010, IEEE Standard for Modeling and Simulation High Level Architecture — Federate Interface Specification	Standard	IEEE
6.	IEEE Std 1516.2™-2010, IEEE Standard for Modeling and Simulation High Level Architecture — Object Model Template Specification	Standard	IEEE
7.	IEEE Std 1730™-2010, IEEE Recommended Practice for Distributed Simulation Engineering and Execution Process (DSEEP) (Revision of IEEE Std 1516.3™-2003)	Standard	IEEE
8.	IEEE Std 1730.1™-2013, IEEE Recommended Practice for Distributed Simulation Engineering and Execution Process Multi-Architecture Overlay (DMAO)	Standard	IEEE
SISO-SUPPORTED ISO/IEC STANDARDS			
9.	ISO/IEC 18023-1, SEDRIS—Part 1: Functional Specification	Standard	ISO/IEC
10.	ISO/IEC 18023-2, SEDRIS—Part 2: Abstract transmittal format	Standard	ISO/IEC
11.	ISO/IEC 18023-3, SEDRIS—Part 3: Transmittal format binary encoding	Standard	ISO/IEC
12.	ISO/IEC 18024-4, SEDRIS language bindings—Part 4: C	Standard	ISO/IEC
13.	ISO/IEC 18025, Environmental Data Coding Specification (EDCS)	Standard	ISO/IEC

#	Standards, Guidance, and Reference Products	Product Type	Standards Organization
14.	ISO/IEC 18041-4, EDCS language bindings—Part 4: C	Standard	ISO/IEC
15.	ISO/IEC 18026, Spatial Reference Model (SRM)	Standard	ISO/IEC
16.	ISO/IEC 18042-4, SRM language bindings—Part 4: C	Standard	ISO/IEC
SISO STANDARDS PRODUCTS			
17.	SISO-STD-001-2015, Standard for Guidance, Rationale, and Interoperability Modalities for the Real-time Platform Reference Federation Object Model, Version 2.0	Standard	SISO
18.	SISO-STD-001.1-2015, Standard for Real-time Platform Reference Federation Object Model, Version 2.0	Standard	SISO
19.	SISO-STD-002-2006, Standard for Link 16 Simulations	Standard	SISO
20.	SISO-STD-003-2006; Standard for Base Object Model (BOM) Template Specification	Standard	SISO
21.	SISO-STD-003.1-2006; Guide for BOM Use and Implementation	Standard	SISO
22.	SISO-STD-004-2004, Standard for Dynamic Link Compatible HLA API Standard for the HLA Interface Specification	Standard	SISO
23.	SISO-STD-004.1-2004, Standard for Dynamic Link Compatible HLA API Standard for the HLA Interface Specification	Standard	SISO
24.	SISO-STD-006-2010, Standard for Commercial Off-the-Shelf (COTS) Simulation Package Interoperability (CSPI)	Standard	SISO
25.	SISO-STD-007-2008, Standard for Military Scenario Definition Language	Standard	SISO
26.	SISO-STD-008-2010, Standard for Core Manufacturing Simulation Data (CMSD)-UML Model	Standard	SISO
27.	SISO-STD-008-01-2012, Standard for Core Manufacturing Simulation Data – XML Representation	Standard	SISO
28.	SISO-STD-009-00-DRAFT, Standard for Simulation Reference Markup Language Specification (in balloting)	Draft Standard	SISO
29.	SISO-STD-009-01-DRAFT, Standard for Simulation Reference Markup Language Engine Specification – Level 0 (in balloting)	Draft Standard	SISO
30.	SISO-STD-011-2014, Standard for Coalition-Battle Management Language (C-BML)	Standard	SISO

#	Standards, Guidance, and Reference Products	Product Type	Standards Organization
31.	SISO-STD-012-2013, Standard for Federation Engineering Agreements Template (FEAT)	Standard	SISO
32.	SISO-STD-013-2014, Standard for Common Image Generator Interface (CIGI), Version 4.0	Standard	SISO
33.	SISO-STD-014-00-DRAFT, Standard for Gateway Description Language (in balloting)	Draft Standard	SISO
34.	SISO-STD-014-01-DRAFT, Standard for Gateway Filtering Language (in balloting)	Draft Standard	SISO
35.	SISO-STD-015-2016, Standard for Distributed Debrief Control Architecture	Standard *	SISO
36.	SISO-STD-016-00-2016, Standard for UCATT Laser Engagement Interface	Standard *	SISO
SISO GUIDANCE PRODUCTS			
37.	SISO-GUIDE-001.1-2012, Guide for Generic Methodology for Verification and Validation (GM-VV) to Support Acceptance of Models, Simulations, and Data, GM-VV Volume 1: Introduction	Guidance	SISO
38.	SISO-GUIDE-001.2-2013, Guide for Generic Methodology for Verification and Validation (GM-VV) to Support Acceptance of Models, Simulations, and Data, GM-VV Volume 2: Implementation Guide.	Guidance	SISO
39.	SISO-GUIDE-003-00-2016, Guide for UCATT Live Simulation Standards and Architecture *	Guidance *	SISO
40.	SISO-GUIDE-004-DRAFT, Guide for Coalition Battle Management Language (C-BML) Phase 1 (in balloting)	Draft Guidance *	SISO
41.	SISO-GUIDE-009-DRAFT, Guide for Simulation Reference Markup Language – Primary Features (in balloting)	Draft Guidance *	SISO
SISO REFERENCE PRODUCTS			
42.	SISO-REF-010-2016, Reference for Enumerations for Simulation Interoperability *	Reference *	SISO
43.	SISO-REF-010.1-2016, Reference for Standards Activity Committee Special Working Group Enumerations for Simulation Operations Manual	Reference *	SISO
44.	SISO-REF-039-2013, Reference for Generic Methodology for Verification and Validation (GM-VV) to Support Acceptance of	Reference	SISO

#	Standards, Guidance, and Reference Products	Product Type	Standards Organization
	Models, Simulations and Data, GM-VV Vol. 3: Reference Manual		
45.	SISO-REF-059-00-2015, Reference for UCATT Ammunition Table	Reference *	SISO

* New SISO Products