ISO/IEC JTC 1/SC 24 N4946
ISO/IEC JTC 1/SC 24/WG 8 N0677
8 July 2023

SEDRIS Organization Report
to
ISO/IEC JTC 1/SC 24 and WG 8 Plenary Meetings
Sydney Australia
10 – 14 July 2023

SEDRIS Organization has continued its contributions to new and on-going work of SC 24 and its working groups, including monitoring work in WG 11 and JWG 12, and contributing to new and existing work items in WG 8, WG 9, WG 10, as well as supporting SC 24-level activities.

For projects within WG 8, SERIS Organization has continued supporting the on-going work of the Korean National Body for visualizing SEDRIS data using X3D. To this end, the C++ language bindings for the application program interfaces (API) of EDCS and SRM have moved forward. Through a few iterations, Dr. Myeong Won Lee and SEDRIS Organization worked to support the incorporation of the ISO/CS Editors' comments on the EDCS C++ language binding standard (ISO/IED 18041-5). The text of the standard has recently reached proof-review stage (prior to IS publication). Some of the Draft International Standard (DIS) stage comments were related to the HTML nature of the document. In its previous resolutions during the last several years, SC 24 has raised requests regarding ISO publication guidelines that also support HTML-based standards. As consideration for guidelines for HTML standards may be continuing, the 18041-5 standard will be published as HTML, just as most WG 8 (and WG 6) standards have been published over the last 25 years. Also, SEDRIS Organization has noted that after 18041-5 has been published it would need to be revised, or amended, in order to be fully compliant with the Edition 2 of the EDCS standard by incorporating the dictionary entries of Edition 2 (instead of the current content that is based on Edition 1 of EDCS standard). There is significant overlap and commonality between most of the dictionary entries of the two editions of EDCS, but it would be best if the EDCS C++ standard reflected the content of Edition 2 entries. As this is done, a new Edition of EDCS C language binding (18041-4) can also be produced simultaneously to provide full compatibility with Edition 2 of the EDCS standard.

For the SRM C++ language binding standard (ISO/IEC 18042-5), unfortunately, SEDRIS Organization was not able to conduct an in-depth review, while the text of 18042-5 was in Committee Draft (CD) stage. The CD text is moving to the Draft International Standard (DIS) stage, and it may be possible to do a better review during the DIS ballot phase.

Earlier in 2023, the Koran National Body proposed a new C++ language binding, ISO/IEC 18024-5, for the ISO/IEC 18023 SEDRIS Part 1 (DRM and STF) by providing a new work item proposal, accompanied with Working Draft text. The proposal received approval vote as a new project, but did not receive the required number of national body support for the participation criteria. SEDRIS Organization will continue to work with WG 8 and the Korean National Body on the next steps for the development of 18024-5.

For more than a decade and in previous Korean National Body projects, SEDRIS Organization has supported the visualization of STF data by direct conversion to X3D, or

through development of web-based interfaces. It has also been discussed in multiple WG 8 meetings in the past few years that C++ implementations of SRM and DRM, which are freely available as open source SDKs from the SEDRIS website, will support the visualization goal. Therefore, there is no special technical reason to first establish published C++ standards and an XML-based STF standard, before moving forward with an STF-to-X3D conversion or visualization tool. Both paths can be pursued at the same time, and can inform each other, potentially resulting in better tools and better standards.

Based on productive and continuing close cooperation with key geodesy experts at the US National Geospatial-Intelligence Agency (NGA), in October 2021 SEDRIS Organization began its recent work on Edition 3 of the ISO/IEC 18026 Spatial Reference Model (SRM). In May 2023, SEDRIS Organization submitted the CD text for Edition 3 of SRM, along with a new work item proposal. As with Edition 2, Edition 3 is comprised of nearly thirty cross-linked multi-file PDF documents, and contains new concepts as well as significant improvements to existing concept. The SRM Editors will highlight these additions and changes during the WG 8 Working Session. Specification of orientation and rotational relationships between objects/frames is a significant part the new Edition 3. In that regard, during 2022 several technical exchange meetings with Open Geospatial Consortium's GeoPose Standards Working Group (co-chaired by Ms. Christine Perey) were held, and an early version of the Orientation clause was provided for their review. Continuation of the exchange of ideas on topics related to both SRM and GeoPose is anticipated to continue.

SEDRIS Organization has continued working with the Simulation Interoperability Standards Organization's (SISO) standards groups. This includes: supporting the Environmental Data Representation Standards Product Support Group, which closely cooperates with WG 8 and provides a focal point for relevant SISO community activities on environmental data standards and topics; contributing to the work of Product Development Group (PDG) on the Discovery Metadata Specification for M&S Resources; monitoring the work of XR Interoperability Standards Study Group; and contributing to the development of Reuse and Interoperation of Environmental Data and Processes (RIEDP) PDG. The on-going activities in these groups are relevant to one or more projects within SC 24. For example, there is interest in SISO's XR Study Group to better understand the related projects in SC 24. Of course, the RIEDP standards use and reference the SEDRIS standards. The first RIEDP PDG product, the *RIEDP Data Model Foundations*, was published in 2018 as the SISO Guidance Product SISO-GUIDE-007-2018. Work on the second product (the *RIEDP Detailed Features Descriptions*) is nearing completion, with contributions from experts in the simulation community on environmental characteristics associated with material, light, and sensor-related semantics. SEDRIS Organization has continued to encourage closer participation and interaction between SISO and SC 24 in activities and projects of mutual interest.

Contributions to the development and review of WG 9 documents and standards on Mixed and Augmented Reality (MAR) have continued. The work of WG 9 remains of great interest. As noted in prior reports, and in order to enhance and strengthen the areas of work in WG 9, it is important that WG 9 increase seeking more of the direct involvement of practitioners in industry, ensuring the standards focus on providing capabilities and tested solutions that will address practical and existing problems.

SEDRIS Organization also continues its contributions to the work of WG 10, JWG 12, and monitoring of the developments in WG 11. ISO/IEC TS 5147 *Guidelines for Representation and Visualization of Smart Cities* is an important specification. This Technical Specification emphasizes the relevant uses of existing SC 24 standards in Smart City modeling and

visualization applications. SEDRIS Organization contributed heavily to the development of this Technical Specification, and continues to support the important goals of WG 10.

The emerging work in Smart Cities, the on-going work in MAR, and the use of (VR, AR, or traditional) visualization in training, education, and other applications are closely associated with the capabilities and standards developed during the last four decades for networked modeling and simulation (M&S) applications, in which live and virtual environments are combined and integrated. The experiences gained in the networked M&S domain, including the concepts and capabilities in SEDRIS technologies, are valuable assets in supporting SC 24 and JTC 1 efforts, contributing to the underlying data models, architectures, and representation techniques that are required.

SC 24 standards will play a key role in supporting Systems Integration initiatives, such as Big Data, Sensors, and Smart Cities. In line with these goals, it is critical that SC 24 visualization standards provide a richer support for bi-directional interaction between the user and the underlying data. The ability to query and interact with underlying data is an important aspect of what users require. In addition, it is also critical for all standards activities in SC 24 to clearly articulate what problem is being solved, why the problem is relevant and important, and what value the solutions offer to standardizing the methods or the practices in the community. SEDRIS Organization raised this important issue in 2017 and 2018, which tangentially resulted in further work on the SC 24 Roadmap. While the Roadmap is important, the core issues in clearly articulating "*what problems are being solved and why"* should also remain in focus.

Over the last few years, there has been discontinuity in acknowledging the twenty-five year Cooperative Agreement and Liaison relation between the SEDRIS Organization and ISO, dating back to the formal establishment of the relationship in 1997! Although there is no digital record of the signed agreement, numerous SC 24 and JTC 1 resolutions and documents related to the cooperative agreements, discovered in several archives, do exist. The passage of time has made it difficult to locate the paper records; however, a few months ago a fully signed copy was uncovered at ISO and was shown during a web meeting. At that and several subsequent meetings on this topic, SEDRIS Organization requested that a copy of the signed agreement be provided to both SC 24 and SEDRIS Organization. The intent is to provide a copy, but it has not been done, yet. The same issue – a tone of not fully acknowledging Cooperative Agreement relationship dating back to the mid 1990s time frames – has been raised with other SC 24 liaison organizations, including the Web3D Consortium. The central fact is that both SC 24 and SEDRIS Organization are satisfied with the mutually beneficial cooperative arrangement that allows the standards initiated and developed by SEDRIS Organization, and brought to ISO/IEC SC 24 for review, to be published with equal but separate copyrights of SEDRIS Organization and ISO/IEC. This has been done quite successfully with all previous SEDRIS Organization standards, since the cooperative technical work began in 1997-98.

Dr. Richard (Dick) Puk recently announced he is stepping down as the long-standing Convenor of WG 6. SEDRIS Organization expresses its appreciation for not only the great leadership he has provided for WG 6, but also his significant contributions to the development of SEDRIS standards since 1998. Dick has been the lead editor of all SEDRIS language binding standards, co-editor of 18023 parts 1-3, and editor, co-editor, and contributor to numerous other SC 24 standards. His involvement and leadership in SC 24 dates back to the predecessor groups of SC 24 (before SEDRIS Organizations joined SC 24), he has been an indispensable member of SC 24, and his contributions and guidance throughout the years have been invaluable.

SEDRIS Organization looks forward to continued productive work with SC 24 and all its working groups in developing, progressing, and promoting the SC 24 standards.

Respectfully submitted,

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SEDRIS Organization
8 July 2023