

WG 8 Overview and Roadmap

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Official Title

Environmental Data Representation

What this Means

“Environment” in this context refers to the Physical World in which we live – Land, buildings, vegetation, water, atmosphere etc..

“Environmental Data Representation” is a mechanism to represent the physical world as a set of digital data

SEDRIS is a standard for Environmental Data Representation that covers all types of physical environment – including Outer Space

Why SEDRIS is Needed

Previous standards for environmental data representation were developed for the Modeling and Simulation domain and were proprietary, usually specific to a particular image generator

Even the widely used CDB (Common Data Base), although called “Open”, is managed solely by Presagis

SEDRIS is non-proprietary and provides a standard that is:

- **Universal – applies to terrain (including urban areas), ocean, atmosphere and space**
- **Comprehensive – accommodates data for different uses, applications, and domains – both real and virtual**
- **Unambiguous**
- **Interchangeable**

Key Components of SEDRIS

Instead of representing environmental objects by their visual or image appearance, SEDRIS uses their physical properties and characteristics

SEDRIS achieves this by representing:

- The relationships between environmental objects using a **Data Representation Model (DRM)**
- The necessary characteristics and identifiers for environmental objects, using an **Environmental Data Coding Specification (EDCS)**
- An unambiguous definition of position & orientation, using a **Spatial Reference Model (SRM)**

Status of WG 8 Standards

- **The current WG 8 standards for SEDRIS Technology provide the full capability to define and interchange Environmental Data**
- **Available now, free-of-charge**
- **Complemented by an extensive online registry for the EDCS and SRM that provide a fast track for application-specific changes to be made**
- **An enhancement is planned for the SRM to provide a more unified and comprehensive definition of rotation and orientation. Work has started on this enhancement, but is currently on hold**
- **The published SRM (Edition 2) is valid for all situations, however, except the most complex definitions of rotation and orientation**

Today's Challenges

•The aim of this brief presentation is to show that, because of the information it specifies, SEDRIS is well suited to a range of applications beyond Modeling and Simulation. In particular, the developing technologies of:

- Mixed and augmented reality (MAR)
- VR/AR for Education
- Smart City Visualization
- Internet of Things (IoT)

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Current Efforts and Projects using SEDRIS standards

Further information on all of these projects will be given in presentations today

- Mixed and Augmented Reality (MAR) Reference Model (18039)
- The SISO RIEDP project (Reuse and Interoperation of Environmental Data and Processes (RIEDP))
- Work of OKTAL-SE in providing complex sensor representations and procedural database creation
- VR/AR for Education
- Smart City Visualization

Planned Projects

- SEDRIS Visualization using X3D – Planned work by WG 6

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Any Questions?

Current WG 8 Standards

- **SEDRIS standards support the aims of WG 8**
- **SEDRIS Technology forms the basis of the WG 8 Standards**
- **WG 8 Standards, published between 2005 and 2014, are:**
 - ISO/IEC 18023-1, SEDRIS -- Part 1: Functional specification (Edition 1, Amd 1)
 - ISO/IEC 18023-2, SEDRIS -- Part 2: Abstract transmittal format (Edition 1)
 - ISO/IEC 18023-3, SEDRIS -- Part 3: Transmittal format binary encoding (Edition 1, Amd 1)
 - ISO/IEC 18024-4, SEDRIS language bindings -- Part 4: C (Edition 1, Amd 1)
 - ISO/IEC 18025, Environmental Data Coding Specification (EDCS) (Edition 2)
 - ISO/IEC 18026, Spatial Reference Model (SRM) (Edition 2)
 - ISO/IEC 18041-4, EDCS language bindings -- Part 4: C (Edition 2)
 - ISO/IEC 18042-4, SRM language bindings -- Part 4: C (Edition 1, Amd 1)