**JTC 1/SC 24/WG8\_N0642**

**ISO/IEC JTC 1/SC 24**

**Working Group 8**

**35th WG 8 Plenary Meeting**

**Minutes of Plenary and Other Meetings**

**Sunport Hall Takamatsu
Takamatsu-shi, Kagawa
Japan
26-30 August 2019**

These minutes record the meetings relevant to WG 8 that were held during the 2019 SC 24 Plenary in Takamatsu, Japan.

Contents

Section 1: [Introduction](#Intro)

Section 2: [Technical Presentation Session](#TechPres)

Section 3: [WG 8 Working Session and Presentations](#WorkingSession)

Section 4: [WG 8 Plenary](#WG8Plenary)

Section 5: [Additional Items discussed during the Week](#AdditionalItems)

Appendix A: [Technical Presentations Agenda](#Appendix0)

Appendix B: [Working Session Agenda](#AppendixA)

Appendix C: [WG 8 Plenary Agenda](#AppendixB)

Appendix D: [Meeting Plan](#AppendixC)

Appendix E: [List of Attendees](#AppendixD)

Appendix F: [WG 8 Work Schedule](#AppendixF)

Appendix G: [Action Items](#AppendixG)

Access to WG 8 Presentations referenced in the Minutes

The presentations are stored in the WG 8 document Register and also in the ISO/LiveLink SC 24/WG 8 General Document folder. These may be accessed on-line using the following links:

[WG 8 Document Register](http://www.sedris.org/wg8home/document.htm)

[ISO/LiveLink SC 24/WG 8 General Documents](https://isotc.iso.org/livelink/livelink/open/jtc1sc24wg8)

**WG8\_N0639:** WG 8Convenor’s Report

**WG8\_N0640:** WG 8 Recommendations to SC 24

**WG8\_N0641:** WG 8 Overview and Roadmap

**WG8\_N0643:** SEDRIS Organization Liaison Report to SC 24 and WG 8

**WG8\_N0644:** SEDRIS Data Representation Model (DRM) Capabilities

**WG8\_N0645:** Overview of RIEDP Data Sharing Standards

**WG8\_N0646:** Ideas on the Future Direction of SC 24

SC 24 documents referenced in the Minutes may be accessed at:

[SC 24 N-Documents List](http://isotc.iso.org/livelink/livelink?func=ll&objid=8916524&objaction=ndocslist)

* + - 1. Introduction

This document records the following meetings:

* Technical Presentations Session on Monday 26 August 2019
* WG 8 Working Session on Wednesday 28 August\*
* WG 8 Plenary on Thursday 29 August
* Additional Items discussed during the Week

\* In order to avoid a clash with the SIV Advisory Group Working Session, the WG 8 working session finished at 10:00, instead of 12:00 as advertised in the meeting schedule.

WG 8 members also attended the SC 24 Plenary meeting on Friday 30 August.

SC 24 Resolutions resulting from this meeting have been issued as document **SC24 N4283**, available from the [SC 24 N-Documents List](http://isotc.iso.org/livelink/livelink?func=ll&objid=8916524&objaction=ndocslist).

A number of people participated remotely during the Technical Presentation Session and at other meetings, including the WG8 meetings.

* + - 1. Technical Presentation Session

**Monday 26 August 2019**

**08:30 – 17:30 Takamatsu, Japan**

Corresponding to:

09:30 – 18:30 Australia (East Coast)

07:30 – 16:30 Beijing (China Standard Time)

01:30 – 10:30 France

00:30 – 09:30 UK

19:30 Sunday – 04:30 Monday USA (East Coast)

16:30 Sunday – 01:30 Tuesday USA (Pacific)

**Co-ordinater: Jack Cogman**

The week began with a day dedicated to presentations from all sections of SC 24, including JWG 16. The agenda for the presentations is given in [Appendix A](#Appendix0).

The session began with the ISO and IEC Messages on Ethics and Respect, as required for all meetings in accordance with the resolution passed at the May 2019 JTC Plenary in Hawaii.

Each of the WGs gave an overview of the work they are doing. The WG 8 overview is given by document **WG8 N0641**.

The important points of the presentations considered to be of interest to WG 8 consist of:

 SC 24 Overview and Highlights of Recent Activities – Myeong Won Lee

The areas of ICT that are addressed by SC 24 are listed as:

* mediation of environmental data exchanged among multiple users and producers;
* intelligence and information systems which utilize high resolution imagery formats supporting a variety of applications, including modeling and simulation (M&S) environments, displays and 3D printers and scanners;
* web and document graphics technologies that utilize 2-D and 3-D imagery files for presentation and exchange;
* 3-D environments that incorporate imagery, content concepts and interaction with virtual or synthetic environment applications in modeling and simulation;
* visual applications in which data captured from the real world is combined with virtual data, such as computer graphics and sound, to produce mixed and augmented reality;
* and, in accordance with SD 24, visualization technology and architecture for developing applications in systems integration areas such as smart city, virtual training, wearable devices and 3D digital human representation related to medical and healthcare services

The JTC 1 Ad hoc Group on VR and AR based Education and Training Systems has evolved into Advisory Group AG 13: Use Cases for VR and AR based ICT Integration Systems. Myeong Won Lee continues to be the Convenor of this Group.

All Ad hoc Groups under JTC 1 have now been moved to Advisory Groups. A related result is that:

* The SWG for Business Plan now becomes the AG for Business Plan and
* The Study Group for Systems Integration Visualization (SIV) becomes the Advisory Group for SIV.

The full presentation is given in **SC24 \_N4251** available from the [SC 24 N-Documents List](http://isotc.iso.org/livelink/livelink?func=ll&objid=8916524&objaction=ndocslist).

Advisory Group on Systems Integration Visualization – Peter Ryan

The aim of the Advisory Group is to investigate the use of visualization for ICT Systems Integration. Two draft NWIPS have been generated for:

* Guidelines for Representation and Visualization of Smart Cities
* Health Information Modeling and Representation for VR Smart Cities

In order to develop an ISO standard, the group must be a Working Group. This issue was discussed later in the week – see [section 3.8](#Section38).

Joint Working Group 16 (JWG 16) – Christophe Mouton

The Joint Working Group JWG 16 established by ISO TC 184/SC 4 includes JTC 1/SC 24 and ISO TC 171/SC 2. The aim of JWG 16 is to find a preferred way to visualize data generated by ISO 10303 (STEP). TC 184/SC 4 are looking for a standard that would allow them to visualize and possibly interrogate the data. X3D is one of the suitable visualization standards being considered.

The presentation by Christophe Mouton, given remotely, gave a summary of the formats available for visualization and other forms of derived data. It did not, however, identify whether any of these formats was the preferred one. Further information was given later in the week at the JWG 16 meetings – see [section 5.2](#Section52).

SEDRIS Data Representation Model (DRM) Capabilities – Farid Mamaghani

A core technology of the SEDRIS mechanism for reuse and interchange is the Data Representation Model (DRM). It is sometimes misunderstood to be similar to a conventional database. To provide an explanation of how the DRM operates, this presentation highlighted the key principles and concepts of the DRM and how it is related to the EDCS and SRM.

The full presentation is available as **WG 8 document 0644** from the [WG 8 Document Register](http://www.sedris.org/wg8home/document.htm) and the [ISO/LiveLink SC 24/WG 8 General Documents](http://isotc.iso.org/livelink/livelink?func=ll&objId=8916696&objAction=browse&viewType=1)

Overview of SISO RIEDP Data Sharing Standards – Farid Mamaghani

SC 24/WG 8, in particular Farid Mamaghani of the SEDRIS Organization, have been working with the SISO development group for RIEDP (Reuse and Interoperation of Environmental Data and Processes) for the past few years. RIEDP has much in common with SEDRIS standards produced by WG 8, as both provide open standards for the exchange of environmental data, but also some important differences.

Farid Mamaghani gave a presentation (remotely) that explained the goal, problems addressed and the concepts of RIEDP. It also compared the similarities and differences between SEDRIS and RIEDP. The presentation is available as **WG 8 document 0645** from the [WG 8 Document Register](http://www.sedris.org/wg8home/document.htm) and the [ISO/LiveLink SC 24/WG 8 General Documents](http://isotc.iso.org/livelink/livelink?func=ll&objId=8916696&objAction=browse&viewType=1)

Offer to host the 2020 SC 24 Plenary – Jason Smith

Jason Smith gave a presentation about an offer from his employer, L3Harris, to host the 2020 SC 24 Plenary and WG meetings at their Melbourne, Florida, USA premises.

Further details are given in **SC24 \_N4260** available from the [SC 24 N-Documents List](http://isotc.iso.org/livelink/livelink?func=ll&objid=8916524&objaction=ndocslist)

Ideas on the Future Direction of SC 24 – Jack Cogman

At the 2018 SC 24 Plenary in Toulouse, Resolution 30 requested input from the SC 24 working group convenors for the development of a roadmap for the future planning of SC 24. Jack Cogman presented a suggested way forward that is summarized as:

* Focus the development of new and emerging standards on actual use cases that address user needs
* Develop an interconnected system of utilities and applications that allow SC 24 standards to be used in combination
* Promote a culture of thinking of SC 24 as a whole rather than individual Working Groups

The presentation is available as **WG 8 document 0646** from the [WG 8 Document Register](http://www.sedris.org/wg8home/document.htm) and the [ISO/LiveLink SC 24/WG 8 General Documents](http://isotc.iso.org/livelink/livelink?func=ll&objId=8916696&objAction=browse&viewType=1)

[Back to Top](#Top)

* + - 1. WG 8 Working Session

**Wednesday, 28 August 2018**

**08:30 – 10:00 Takamatsu, Japan**

These times correspond to:

09:30 – 11:00 Australia (East Coast)

07:30 – 09:00 Beijing (China Standard Time)

01:30 – 03:00 France

00:30 – 02:00 UK

19:30 – 21:00 Tuesday USA (East Coast)

16:30 – 18:00 Tuesday USA (Pacific)

**Please note:**  This meeting was scheduled to run from 08:30 to 12:00 (See [Appendix D](#AppendixC)), but to avoid a clash with the SIV Advisory Group at 10:30 to 12:00, it was changed to finish at 10:00.

Notes on the SIV Advisory Group meeting are given in [Section 5.1](#Section51).

The Agenda is given in [Appendix B](#AppendixA).

**Chair: Jack Cogman**

**Introduction**

The attendees are shown in shown in [Appendix E](#AppendixD).

Welcome and Introductions

The attendees at the meeting introduced themselves.

 Current Work Schedule

There have been no active projects during the year, so the 2018 work schedule was still valid at the time of the meeting. However, this will change if the work programmes discussed in 3.3 are added.

As stated in the work schedule, EDCS LB to C, Ed 3 (18041-4) was published in May 2016. The document issued by ISO was found to be the DIS text for Edition 3, even though it has a front cover referring to ISO/IEC 18041-4:2016(E).

A **Recommendation to SC 24** needs to be made to check the validity of the version that has been published and to obtain the correct version from ISO. A further **Recommendation** is also needed to make the valid version of 18041-4 publically available.

 Pending and Planned Work Programmes

NWIPs and draft documents have been prepared for the following programmes in order to provide a C++ interface to the SEDRIS standards:

EDCS LB to C++

SEDRIS LB to C++

It was agreed that all C++ language bindings for WG 8 standards should be numbered as Part 5 of the standard.

It was pointed out that SEDRIS is dependent on the SRM, hence the SEDRIS LB should not be written until the SRM has been updated to Edition 3. The sequence for developing C++ LBs should therefore be: EDCS, SRM, SEDRIS.

The document submitted for ballot with an NWIP may be either a WD or CD. As C++ has classes, they would need to be included in a document if it were to be submitted as a CD. This is not the case with the current draft documents, hence it was agreed that the draft documents should be submitted as WDs. Initially, the NWIP and WD for the EDCS LB to C++ will be submitted for ballot.

Completion of SRM Edition 3 (18026) is still considered important, but since the language binding programmes can be actioned now, they take priority as they will provide WG 8 with active work programmes.

 EDCS Registry

There have been no changes to the contents of the EDCS Class of items in the SC 24 Registry.

Farid Mamaghani reported that the download function that allows registry content to be downloaded in Excel or Access format is currently not available. This is due to fact that updates to the EDCS registry software that were started some years ago were not fully completed for the Download section. Resources are required to allow the updates to be completed.

The other functions in the EDCS Registry have been fully operational.

**Action 35-01: Complete the updates to the EDCS Registry**

SISO RIEDP project on Reuse and Interoperation of Environmental Data and Processes

The overview of RIEDP (**WG8\_N0645)** given during the Technical Session on Monday by Farid Mamaghani described how RIEDP and SEDIS have similar objectives, in that they both provide open standards for the exchange of environmental data, but differ in the following respect:

* SEDRIS addresses all types of environmental data, whereas RIEDP focuses on a subset.
* SEDRIS is not designed to describe the database generation process, whereas RIEDP specifically does address it.
* SEDRIS defines a binary format, STF, whereas RIEDP relies on existing COTS formats
* SEDRIS provides APIs and tools, whereas RIEDP relies on existing COTS software and tools.

Further details are given in the presentation, **WG 8 document 0645,** which is available from the [WG 8 Document Register](http://www.sedris.org/wg8home/document.htm) and from [ISO/LiveLink SC 24/WG 8 General Documents](http://isotc.iso.org/livelink/livelink?func=ll&objId=8916696&objAction=browse&viewType=1)

 AG on Systems Integration Visualization – Smart Cities, VR/AR for Training, Health Informatics

The Advisory Group on Systems Integration Visualization (SIV) is currently proposing to develop a TS on the ‘Guidelines for Representation and Visualization of 3D Smart Cities’. To publish a document, it would be necessary for the Advisory Group to become a WG (or assign the work to an existing WG). As this topic was considered to be of importance to WG 8, further discussion was deferred to the SIV meeting held after the break.

See [Section 5.1](#Section51) for notes on the SIV Advisory Group meeting.

 Future Direction of SC 24

At the 2018 plenary in Toulouse, it was recommended by SC 24 Resolution 30 that a Roadmap needed to be developed to define the future direction of SC 24. To promote and continue the development of that roadmap, a presentation on “Ideas on the Future Direction of SC 24” was given by Jack Cogman during the Monday Technical Presentations.

Jack Cogman expressed his view that SC 24 needs to work more closely together as a unit rather than as individual groups and that we need to investigate how SC 24 Standards can be used to enhance standards being developed by other standards bodies.

The presentation is available as **WG 8 document 0646** from the [WG 8 Document Register](http://www.sedris.org/wg8home/document.htm) and the [ISO/LiveLink SC 24/WG 8 General Documents](http://isotc.iso.org/livelink/livelink?func=ll&objId=8916696&objAction=browse&viewType=1)

 Work of WG 8 and AG on Systems Integration Visualization

SEDRIS and WG 8 are currently working in the area of systems integration visualization and representation, such as with the SISO RIEDP project (see 3.5 above) and WG 9. At the same time, the AG on Systems Integration and Visualization will need to become a WG in order to develop and publish their proposed TS (see 3.6 above), or it may assign the work to an existing WG. Jack Cogman suggested that a possible solution might be to incorporate the work of the AG into WG 8.

**Action 35-02: Send a table to the meeting attendees that compares the relative attributes of WG 8 and the SG.**

Status of Action items

Existing Action Items

**Action 31-02**

Requirement:

Transfer all documents in the WG 8 Document Register to the WG 8 folder in ISO LiveLink and ensure the two registers are synchronized.

Current Status:

All WG 8 documents issued since May 2015 have been added to the LiveLink SC 24/WG 8 Document Folder, but no documents previous to that. As this has not caused any problems during the past 4 years, the work required to transfer the remaining files cannot be justified.

**Closed**

**Action 31-03**

Requirement:

Investigate whether LiveLink has the capabilities to accommodate other web pages of the WG 8 web site, such as lists of meetings, “What’s New” page, etc.

Current Status:

The LiveLink WG 8 folder already provides lists of meetings. It is no longer considered important to duplicate the other features available on the WG 8 web site (hosted on sedris.org) onto the LiveLink site, hence the action should be closed.

**Closed**

**Action 33-01**

Requirement:

Update the front page of the SC 24 Registry to enable additional classes to have links to their contents.

Current Status:

No action to date.

**Continuing**

**Action 33-02**

Requirement:

Investigate whether persons other than the WG 8 Convenor may edit the LiveLink WG8 document folder.

Current Status:

It has been established that any person registered in the Convenor Support Team for WG8 may edit the WG 8 Document Folder, in addition to the Convenor. The current person is Tim Gifford, who has retired from his WG 8 Secretary position and was replaced on 2018-08-23 by Farid Mamaghani.

**Closed 2018-08-23**

**Action 34-01:**

Requirement:

Investigate whether the SC 24 Liaisons stated on the ISO web site correspond with the current ISO Directives.

Current Status:

Examination of the ISO web page for SC 24 confirmed that the liaison categories are now accurately recorded.

**Closed 2018-08-29**

**Action 34-02**

Requirement:

WG 8 to discuss with the Korea development team on SEDRIS Visualization using X3D before further work proceeds.

Current Status:

Farid Mamaghani reported to the meeting that discussions on the way forward had taken place and that the action could now be closed

**Closed**

**Action 34-03**

Requirement:

Update the SC 24 Register to:

* Add registered items for SEDRIS – Part 1
* Add registered items for SRM
* Update BIIF profiles, when requested
* Add new BIIF profiles, when available

Current Status:

No further action has been reported.

**Continuing**

Action Items raised during this Meeting

**Action 35-01**

Requirement:

Complete the updates to the EDCS Registry, such that the download function for contents of the Registry may be re-enabled.

Current Status:

Higher priority tasks mean that this task may have to be delayed.

**Action 35-02**

Requirement:

Send a comparison of the relative attributes of WG 8 and the AG for Systems Integration Visualization to the meeting attendees, in order to promote discussion on the options for AG SIV becoming a Working Group.

Current Status:

The AG for Systems Integration Visualization (SIV) is developing a Technical Spec for the Representation and visualization of 3D Smart Cities. To publish a document requires the AG to become a WG (or assign the work to an existing WG). Combining WG 8 and AG SIV into a single WG would be one way to achieve this.

Review of the planned WG 8 Work Programme

**Post Meeting Note:**

**Post Meeting note:** The NWIP for an EDCS LB to C++ was approved in January 2020.

The updated work schedule is shown in [Appendix F](#AppendixE) and includes anticipated future work programmes.

Draft WG 8 Recommendations to be forwarded to SC 24.

Actions 35-01 and 35-02 raised during the meeting are internal to WG 8.

It was agreed that the Recommendations to SC 24 should include references to the following:

* The need for ISO to publish the correct version of EDCS LB to C (18041-4) Ed 3
* Make EDCS LB to C (18041-4) Ed 3 a publically available standard
* Ask JTC 1 to clarify what is required for standards to conform to the UN defined Sustainable Development Goals (SDGs) listed in the new NWIP forms. In particular:
	+ The level of justification is required for each SDG
	+ Should existing related standards be taken into account?

(This point relating to SDGs applies to all WGs. It arose from discussions during the HoD/C meeting on Tuesday afternoon when difficulties were reported about completing the revised New Work Item Proposal. This requires the Sustainable Development Goals that will be supported by the proposal to be stated).

The final wording of the Recommendations was deferred to the WG 8 Plenary.

The WG 8 Working Session concluded at 10:12 (local time).

After a short break, the AG on System Integration Visualization continued.

[Back to Top](#Top)

* + - 1. WG 8 Plenary

**Thursday 29 August 2018**

**08:30 – 10:00 Takamatsu, Japan**

These times correspond to:

09:30 – 11:00 Australia (East Coast)

07:30 – 09:00 Beijing (China Standard Time)

01:30 – 03:00 France

00:30 – 02:00 UK

19:30 – 21:00 Tuesday USA (East Coast)

16:30 – 18:00 Tuesday USA (Pacific)

**Chair: Jack Cogman**

The attendees at the meeting are shown in [Appendix E](#AppendixD). This included participants that participated remotely via web conferencing.

The WG 8 Plenary Agenda is given in [Appendix C.](#AppendixB)

Welcome

The Convenor, Jack Cogman, welcomed people to the meeting.

Roll Call and Introductions

Each person attending the meeting introduced herself/himself.

Minutes of the 34th WG 8 plenary meeting held in Toulouse, France

There were no comments, so the minutes of the last Plenary meeting were approved.

 Convenor’s Report

Jack Cogman gave a brief summary of the Convenor’s Report document, which is given in **WG 8 document N0639** in the [WG 8 Document Register](http://www.sedris.org/wg8home/document.htm) and the [ISO/LiveLink SC 24/WG 8 General Documents](http://isotc.iso.org/livelink/livelink?func=ll&objId=8916696&objAction=browse&viewType=1).

As stated at the end of the Convenor’s Report, Jack Cogman announced that he intends to stand down as Convenor. A replacement Convenor therefore needs to be found. One possibility would be to combine the SIV Advisory Group with WG 8, thus allowing the Advisory Group to become a WG. This possibility was discussed during the Working Session (see 3.8)

 Summary of key topics from the WG 8 Working Session

New Work Items (Ref. 3.3)

New Work Items were proposed to provide C++ language bindings for SEDRIS standards, in addition to the existing C language bindings. These will be assigned as Part 5 of the standard and will be developed in the following order:

EDCS LB to C++ 18041-5

SRM LB to C++ 18042-5

SEDRIS LB to C++ 18024-5

An NWIP for EDCS LB and WD is expected to be submitted for ballot soon after the Plenary.

EDCS Registry (Ref. 3.4)

There were no changes to the contents of the EDCS Registry. It was noted, however, that the download function that allows registry content to be downloaded in Excel or Access format, is currently not available.

**Action 35-01** has been raised to correct this situation.

RIEDP (Ref. 3.5)

The SISO RIEDP project addresses the Reuse and Interoperation of Environmental Data and Processes. During the Monday Technical Session, a presentation on RIEDP was given by Farid Mamaghani. The similarities and differences between SEDRIS and RIEDP were explained - see [Section 3.5](#Section35).

Further details are given in the presentation, **WG 8 document 0645,** which is available from the [WG 8 Document Register](http://www.sedris.org/wg8home/document.htm) and from [ISO/LiveLink SC 24/WG 8 General Documents](http://isotc.iso.org/livelink/livelink?func=ll&objId=8916696&objAction=browse&viewType=1)

Future Direction of SC 24 (Ref. 3.7)

To continue the discussion on a Roadmap for SC 24 that started at the 2018 Plenary meeting in Toulouse, a presentation on “Ideas on the Future Direction of SC 24” was given by Jack Cogman during the Monday Technical Presentations.

Jack Cogman expressed his view that SC 24 needs to work more closely together as a unit rather than as individual groups, and that we need to investigate how SC 24 Standards can be used to enhance standards being developed by other standards bodies.

The presentation is available as **WG 8 document 0646** from the [WG 8 Document Register](http://www.sedris.org/wg8home/document.htm) and the [ISO/LiveLink SC 24/WG 8 General Documents](http://isotc.iso.org/livelink/livelink?func=ll&objId=8916696&objAction=browse&viewType=1)

Relationship between WG 8 and the SIV Advisory Group (Ref. 3.8)

As stated in the Convenor’s Report above (4.4), the current Convenor Jack Cogman intends to stand down before the 2020 Plenary. In parallel with this, the Advisory Group for SIV plans to publish a document, which will require it to become a Working Group (unless the work is assigned to an existing WG). A possible way in which the AG could become a WG would be if WG 8 and AG for SIV were to merge.

This possibility was proposed by Jack Cogman at the WG 8 Working Session. As there was insufficient time in which to discuss it, it was decided that a table comparing the respective attributes of WG 8 and the AG be sent to the meeting attendees for them to review and comment. **Action 35-02** was raised to action this.

A presentation on the work of the AG was given to JTC 1/WG 11 Smart Cities at their meeting in London in July by Jack Cogman. WG 11 seemed to believe at the time that a liaison already existed between SC 24/WG 8 and JTC 1/WG 11. However, as this is not the case, a **Recommendation** **to SC 24** needs to be made to establish a Cat A liaison to JTC 1/WG 11.

 National Body Reports

National body reports have been issued as the following SC 24 documents:

N4217 – Australia

N4273 – China

N4243 – Japan

N4245 – Korea

N4235 – UK

N4246 – USA

These documents may be obtained from the [SC 24 N-Documents List](http://isotc.iso.org/livelink/livelink?func=ll&objid=8916524&objaction=ndocslist) on LiveLink.

Liaison Reports

DGIWG

There was no liaison report from DGIWG, the Defense Geospatial Information Working Group.

SEDRIS

The SEDRIS Organization reported that over the last 12 months, they have been involved in the following activities:

* Assisting the Advisory Group for SIV and contributing to a new Guidelines document on Smart Cities
* Updating and restoring the capability for downloading EDCS Registry content
* Editorial work on the RIEDP Guideline and Standard, which use SEDRIS standards
* Support for the SISO EDRS (Environmental Data Representation Standards) Product Support Group
* Contributions to the development and review of WG 9 documents on MAR (Mixed and Augmented Reality)

Further details are given in the SEDRIS liaison report **WG 8 document N0643**, which may be downloaded from the [WG 8 Document Register](http://www.sedris.org/wg8home/document.htm) and the [ISO/LiveLink SC 24/WG 8 General Documents](http://isotc.iso.org/livelink/livelink?func=ll&objId=8916696&objAction=browse&viewType=1). It is also available as document **SC24 N4269**.

TC 211, Geospatial Report

There was no liaison report from TC 211.

SISO

There was no liaison report from SISO, the Simulation Interoperability Standards Organization.

OGC

There was no liaison report from OGC, the Open Geospatial Consortium.

Other

There were no other Liaison Reports.

The SC 24 documents may be downloaded from the [SC 24 N-Documents List](http://isotc.iso.org/livelink/livelink?func=ll&objid=8916524&objaction=ndocslist) on LiveLink.

Editors Reports

There are currently no active programmes, hence there were no Editor’s Reports. Future programmes are planned for Language Bindings to C++, but these have not yet been approved.

Report from the Registry Rapporteurs

SC 24 Register – General

The entry point for the registries for SEDRIS part 1 and SRM are currently not linked to their corresponding register sites from the main SC 24 Registry site. This was raised as Action 34-03 at the 2018 Plenary in Toulouse, but has not progressed.

EDCS Registry

EDCS has about 300 items to address. As these were submitted a number of years ago and could not be resolved during the publishing of Edition 2 of the EDCS standard, the appropriate action would be to either eliminate the items or resolve with the submitters based on Edition 2 of the EDCS standard.

A problem with the content Download capability of the EDCS Registry as Access or Excel files has already been raised as Action 35-01

SRM Registry

No items have been submitted to date.

SEDRIS DRM Registry

No items have been submitted to date.

Appointment of Registry Rapporteurs

The existing Registry Rapporteurs were re-appointed, with no objections, as shown below:

EDCS: Farid Mamaghani

SRM: Paul Berner

DRM: Farid Mamaghani

WG 8 Content of the SC 24 Business Report and Dashboard for 2018-2019

The Business Plan consists of a 4-page Business Report only, as JTC 1 has decided that a Dashboard is no longer required. All WG activities, including those for WG 8, are reported in terms of Accomplishments, Deliverables and Strategies/Risks.

For WG 8 accomplishments, contributions to the MAR reference Model and other WG 9 standards efforts and to the RIEDP project will be noted. There have been no deliverables during the year. The Strategies/Risks section will state that the strategy is to widen the scope of existing standards into new application areas, such as the WG 9 MAR standards, the SISO RIEDP project and the Advisory Group for Systems Integration Visualization (SIV), in particular for Smart Cities data representation and visualization.

Work Schedule

The planned EDCS and SRM languages bindings to C++ have been added to the Work Schedule. The table in [Appendix F](#AppendixF) shows the current status of the most recent WG 8 standards, including anticipated future work programmes.

Recommendations to SC 24

Based on the 2018 Recommendations to SC 24, the following changes were made to produce the 2019 Recommendations to SC 24. These changes were the result of items identified in the Working Session (3.11) and at this meeting.

1. The SC 24 Committee Manager to verify with ISO the validity of the published version of 18041-4:2016 that was issued to him and to obtain the correct version.
2. The valid and correct version of 18041-4:2016 to made publically available.
3. The representation of digital holographic data as a new work area should be removed, as there has been no further activity on this topic.
4. Request SC 24 to seek clarification of how the UN specified Sustainable Development Goals (SDGs) (on the new NWIP forms) should be interpreted. Support for SDGs is now required for all New Work Item Proposals. And also clarify the impact and/or required action for relating existing published standards to these SDGs.
5. Request a Cat A Liaison with JTC 1/WG 11 Smart Cities.
6. Request SC 24 to investigate the relative work of WG 8 and the AG for Systems Integration Visualization and to determine whether the AG should be made into a WG or WG 8 and the AG should be combined into a single Working Group.

The final 2018 Recommendations to SC 24 may be accessed as **WG 8 Document N0640** in the [WG 8 Document Register](http://www.sedris.org/wg8home/document.htm) and the [ISO/LiveLink SC 24/WG 8 General Documents](http://isotc.iso.org/livelink/livelink?func=ll&objId=8916696&objAction=browse&viewType=1).

Action Items

Existing Open Items

The status of the existing Action Items were resolved in the Working Session as follows:

31-02: Closed

31-03: Closed

33-01: Continuing

33-02: Closed

34-01: Closed

34-02: Closed

34-03: Continuing

New Items

Resulting from this meeting, two new Action Items were raised:

**Action 35-01:**

Requirement:

Complete the updates to the EDCS Registry, such that the download function for contents of the Registry may be re-enabled.

Current Status:

Higher priority tasks mean that this task may have to be delayed.

**Action 35-02:**

Requirement:

Send a comparison of the relative attributes of WG 8 and the AG for Systems Integration Visualization to the meeting attendees, in order to promote discussion on the options for AG SIV becoming a Working Group.

Current Status:

**Post Meeting Note:** A comparison table was sent to the meeting attendees on 2020-02-18.

**Closed 2020-02-18**

The updated action list is shown in [Appendix G](#AppendixG)

Adjourn

The Plenary meeting closed at 10:00 (local time).

[Back to Top](#Top)

* + - 1. **Additional Items discussed during the Week**

In addition to the WG 8 meetings, other meetings held during the week highlighted issues considered to be of interest to WG 8.

 Systems Integration Visualization (SIV) Advisory Group (AG)

There was one meeting for the Advisory Group, which was held on 28 August 2019, following the WG 8 Working session.

The meeting was chaired by Peter Ryan.

Presentations

Presentations were given on:

* The architecture for 3D Virtual Training Systems
* Multimodal interfaces in VR training systems
* Human health information systems integration
* Smart City representation and visualization

Discussions

The discussion related to the need for better definitions for terms such as virtual reality. Farid Mamaghani pointed out, for example, that flight simulation was sometimes referred to as virtual reality, whereas in fact, it is a simulated environment that provides training based on real, physical equipment.

Recommendations

NWIPs will be submitted after the Plenary for:

* Guidelines for representing and visualizing Smart Cities
* Smart Cities health information modeling and representation for Smart Cities

In order to progress the NWIPs, it will be necessary for the AG to be either discontinued and a new WG created, or the new work be assigned to an existing WG.

The first meeting of the proposed WG will be held during the 2020 SC 24 Plenary.

 JWG 16 - Formats for Visualization and other derived forms of product data

JWG 16 is a Joint Working Group established by TC 184/SC 4, which includes JTC 1/SC 24 and TC 171/SC 22 WG 16. It has an interest in SC 24 because it is researching existing standards that would be suitable for visualizing the STEP data generated by ISO 10303. X3D has been selected as one of the candidate visualization standards.

Two working sessions and one plenary meeting were held during the week.

Soonhung Han, the local Convenor of JWG 16, chaired the Plenary meeting, since Christophe Mouton could not attend the Takamatsu meetings.

The task facing JWG 16 is not only to find a standard to visualize STEP data, but the more general problem of managing the transition of technical data packages from 2D paper-based drawings to multi-media 3D data representations. STEP data has been in use over many years, as ISO 10303 was published over 20 years ago. As discussed during the 2018 meetings in Toulouse, there are considerable similarities between the approach used in STEP and SEDRIS standards. Some of the capabilities in SEDRIS can be leveraged in JWG 16 work.

The current work program consists of:

* ISO TS 23301 STEP Geometry Service
* ISO NP 17506: COLLADA – Supporting the progress from PAS to IS
* ISO NP 3151: Visualization components for the PLM-MES interface for plant industry
* ISO TR 24464: Visualization elements of digital twins
* TR on Industrial requirements for product data visualization
* ISO NWIP 14306 Ed 3: JT file format specification for 3D visualization

ISO 19777 X3D is not included in the above list as it is already a published ISO standard.

COLLADA is produced by the Khronos Group, whose president, Neil Trevett, was present at the meeting.

[Back to Top](#Top)

# Appendix A

# Technical Presentations Agenda

**Monday 26th August 2019**

**08:30 – 17:30 (Japan time)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Time Slot** | **Duration** | **Start Time** | **Topic** | **Presenter** |
| 1 | 15 | **8:30** | SC 24 Overview / Update / Highlight of Recent Activities | M. Lee / C. Whitlock |
| 2 | 15 | **8:45** | Overview of WG 6 - Status and Highlights | R. Puk |
| 3 | 15 | **9:00** | Overview of WG 7 - Status and Highlights | C. Wang |
| 4 | 15 | **9:15** | Overview of WG 8 - Status and Highlights | J. Cogman |
| 5 | 15 | **9:30** | Overview of WG 9 - Status and Highlights | G. Kim |
| 6 | 15 | **9:45** | Overview of SIV SG - Status and Highlights | P. Ryan |
|   | 30 | **10:00** | ***Break*** |   |
| 7 | 30 | **10:30** | SC 24 Standards in Smart City Applications - Interactions with WG 11 | P. Ryan and J. Cogman |
| 8 | 30 | **11:00** | SEDRIS Data Representation Model (DRM) Capabilities (remote presentation) | F. Mamaghani |
| 9 | 30 | **11:30** | 3D Human Organ Representation Model | M. Lee |
|   | 60 | **12:00** | ***Lunch*** |   |
| 10 | 30 | **13:00** | Proposed Updates to ISO/IEC 12087-5: Basic Image Interchange Format (BIIF) | J. Smith |
| 11 | 30 | **13:30** | Digestive System Representation | M. Lee |
| 12 | 30 | **14:00** | Respiratory Model Architecture | K. Yoo |
| 13 | 30 | **14:30** | Overview of RIEDP Data Sharing Standards (remote presentation) | F. Mamaghani |
|   | 30 | **15:00** | ***Break*** |   |
| 14 | 30 | **15:30** | MAR Benchmark Activities from Research through Production | Koji Makita, Canon Inc., JP |
| 15 | 30 | **16:00** | Data-driven Visualization | K. Yoo |
| 16 | 15 | **16:30** | Overview of JWG 16 - Status and Highlights (remote presentation) | C. Mouton |
| 17 | 30 | **16:45** | Ideas on the Future Direction of SC 24 | J. Cogman |
| 18 | 45 | **17:15** | Open Discussion | All |
|  |  | **18:00** | ***End*** |  |

[Back to Top](#Top)

#  Appendix B

WG 8 Working Session Agenda

Takamatsu, Japan - 2019

**Wednesday, 28 August 2019**

**08:30 – 10:00 Takamatsu, Japan**

These times correspond to:

09:30 – 11:00 Australia (East Coast)

07:30 – 09:00 Beijing (China Standard Time)

01:30 – 03:00 France

00:30 – 02:00 UK

19:30 – 21:00 Tuesday USA (East Coast)

16:30 – 18:00 Tuesday USA (Pacific)

**Please Note:** This meeting was scheduled to run from 08:30 to 12:00, but to avoid a clash with the SIV Advisory Group at 10:30 to 12:00, it finished at 10:00.

**Chair: Jack Cogman**

1. Welcome and Introductions
2. Current Work Schedule
3. Pending and Planned Work Programmes:

In view of the ISO rule that a WG with no items on its Work Programme should be disbanded, it is important for a new work item to be requested. The following NWIPs are proposed:

EDCS LB to C++

SEDRIS LB to C++

1. EDCS Registry
2. SISO RIEDP project on Reuse and Interoperation of Environmental Data and Processes
3. AG on Systems Integration Visualization – Smart Cities, VR/AR for Training, Health Informatics
4. SC 24 Roadmap
5. Work of WG 8 and AG on Systems Integration Visualization
6. Current status of Action Items
7. Review of the planned WG 8 work programme
8. Draft recommendations to be forwarded to the WG 8 Plenary meeting

[Back to Top](#Top) **Appendix C**

35th WG 8 Plenary Agenda

**Takamatsu, Japan – 2019**

**Thursday, 29 August 2019**

**08:30 – 10:00 Takamatsu, Japan**

These times correspond to:

09:30 – 11:00 Australia (East Coast)

07:30 – 09:00 Beijing (China Standard Time)

01:30 – 03:00 France

00:30 – 02:00 UK

19:30 – 21:00 Tuesday USA (East Coast)

16:30 – 18:00 Tuesday USA (Pacific)

**Chair: Jack Cogman**

1. Welcome
2. Roll call and introductions
3. Corrections to, and approval of, the minutes of the 34th meeting held at OKTAL-SE, Toulouse, France
4. Convenor's report
5. Summary of key topics from the Working Session
6. National Body reports
7. Liaison reports
* SEDRIS
* SISO
* Any other liaison reports
1. Editor reports
2. Reports from the registry rapporteurs
3. Appointment of registry rapporteurs
* EDCS
* SRM
* SEDRIS
1. Summary of WG 8 content in the draft SC 24 Business Plan for 2019-20
2. Work Schedule
3. Review and approval of WG 8 Recommendations to SC 24
4. Review action items
5. Adjourn

[Back to Top](#Top)

**Appendix D - Meeting Plan**

**Meeting Schedule for the 2019 SC 24 and Working Group Meetings**

**Held at Sunport Hall Takamatsu
Takamatsu-shi, Kagawa,
Japan
26-30 August 2019**



[Back to Top](#Top)

**Appendix E**

**List of Attendees**

**2019 SC 24 Plenary Meetings, Takamatsu, Japan**

|  |  |  |  |
| --- | --- | --- | --- |
| **NB/LO + Name** | **Affiliation** | **E-Mail** | **Attendance at Meetings** |
| **WG 8 Working Session**  | **WG 8 Plenary** | **SC 24 Plenary** |
| **Face-to-Face/****Remote** | **Face-to-Face/ Remote**  | **Face-to-Face/ Remote** |
| **SC 24 Officers** |  |  |  |  |  |
| Myeong Won Lee | SC 24 Chair, Suwon University | myongwonlee@gmail.com | Face-to-Face | Face-to-Face | Face-to-Face |
| Charles Whitlock | SC 24 Secretary, BSI | charles.whitlock@bsigroup.com | Face-to-Face | Face-to-Face | Face-to-Face |
| **Australia** |  |  |  |  |  |
| Peter Ryan | DSTO Australia | peter.ryan@dsto.defence.gov.au | Face-to-Face | Face-to-Face | Face-to-Face |
| Doug Stapleton |  | doug.stapleton@hinfosec.com.au | Face-to-Face | Face-to-Face | Face-to-Face |
| **China** |  |  |  |  |  |
| Cong Wang | CESI | wangcong@cesi.cn |  |  | Face-to-Face |
| Hanqing Jiang |  |  |  | Face-to-Face | Face-to-Face |
| Shanshan Ma |  |  |  | Face-to-Face | Face-to-Face |
| Yiang Li |  |  |  | Face-to-Face | Face-to-Face |
| **France** |  |  |  |  |  |
| Christophe Mouton | TC 184/SC 4/JWG 16, EDF | christophe.mouton@edf.fr | Technical Presentations session and JWG 16 meetings  | Remote |
| **Korea** |  |  |  |  |  |
| Kwan-Hee Yoo | Chungbuk University | khyoo@chungbuk.ac.kr |  | Face-to-Face | Face-to-Face |
| Soonhung Han | KAIST | shhan@kaist.ac.kr | Face-to-Face | Face-to-Face | Face-to-Face |
| **Japan** |  |  |  |  |  |
| Masaki Aono | Toyohashi University of Technology | aono@tut.jp | Face-to-Face | Face-to-Face | Face-to-Face |
| Takeshi Kurata | AIST | t.kurata@aist.go.jp |  |  | Face-to-Face |
| Koji Makita | Canon, Inc. |  koji.makita.jp@ieee.org | Face-to-Face | Face-to-Face | Face-to-Face |
| **UK** |  |  |  |  |  |
| Jack Cogman | WG 8 Convenor | jack.cogman@datasim.net | Face-to-Face | Face-to-Face | Face-to-Face |
| **US** |  |  |  |  |  |
| Dick Puk | WG 6 Convenor | puk@igraphics.com | Face-to-Face | Face-to-Face | Face-to-Face |
| Jason Smith | L3Harris Corp. | jason.smith@harris.com | Face-to-Face | Face-to-Face | Face-to-Face |
| **SEDRIS LO** |  |  |  |  |  |
| Rob Cox | US DoD | robert.m.cox14.civ@mail.mil |  | Remote |  |
| Tim Gifford | SEDRIS Organization | tim.gifford003@gmail.com |  | Remote |  |
| Farid Mamaghani | SEDRIS Organization | farid@sedris.org | Remote | Remote | Remote |
| **Khronos LO** |  |  |  |  |  |
| Neil Trevett | President, Khronos Group | ntrevett@nvidia.com |  | Face-to-Face | Face-to-Face |
| **Web3D LO** |  |  |  |  |  |
| Don Brutzman | Web3D Consortium | brutzman@nps.navy.mil |  | Face-to-Face | Face-to-Face |

[Back to Top](#Top)

**Appendix F**

**WG 8 Work Schedule – Showing latest Versions of Standards and Anticipated Future Work**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Standard** | **WD** | **CD****PDAM****PDTR** | **DIS****FPDAM** | **FDIS****FDAM****DTR** | **IS/TR** |
| **EDCS Amendment 1 initially, then changed to Edition 2****18025** | **Approved Oct 08** | **PDAM** **Aug 11** | **DIS Sep 12** | **FDIS** **Oct 13** | **Ed 2: 2014 2014-02** |
| **EDCS LB to C Ed 3****18041-4** | **NWIP 14 Jun 13** | **CD 14 Jun 13** | **DIS** **15 Nov 15** |  | **Ed 3: 2016 2016-05-27** |
| **SRM Edition 3****18026** | **Approved Feb 09** | **CD** **Aug 11** | **DIS Oct 12** | **FDIS Cancelled Q2 2014** | **(Ed 3)****NWIP to be raised** |
| **EDCS LB to C++** **18041-5** | **NWIP****08 Jan 20** |  |  |  |  |
| **SRM LB to C++****18042-5** |  |  |  |  |  |
| **SRM Edition 3****18026** |  |  |  |  |  |
| **SRM LB to C Ed. 1 Amendment 2****18042-4** | **NWIP when SRM Ed 3 published** |  |  |  |  |

**Abbreviations**

**NWIP:** New Work Item Proposal

**CD:** Committee Draft

**PDAM:** PreliminaryDraft Amendment

**PDTR:** Preliminary Draft Technical Report

**DIS:** Draft International Standard

**FPDAM:** Final Preliminary Draft Amendment

**FDIS:** Final Draft International Standard

**FCD:** Final Committee Draft (No longer used)

**FDAM:** Final Draft Amendment

**DTR:** Draft Technical Report

**IS:** International Standard

**TR:** Technical Report

[Back to Top](#Top)

**Appendix G**

**Action Items**

**ISO/IEC JTC 1/SC 24/WG 8**

**Sunport Hall Takamatsu, Takamatsu-shi, Kagawa, Japan
29th August 2019**

**This table shows the Action Items that were open at the close of the Toulouse WG 8 Plenary on 2018-08-09.**

**Shaded areas indicate action items that have been closed since then.**

| No. | Action Item | Assigned to | Due | Done | Comment |
| --- | --- | --- | --- | --- | --- |
| 31-02 | Transfer all documents in the WG 8 Document Register to the WG 8 folder in ISO LiveLink and ensure the two registers are synchronized. | J.CogmanG. Wentz | March 2016 | Aug 2019 | 2016-Aug-25: Continuing.08-Aug-2017: All WG 8 documents issued since May 2015 have been uploaded to the ISO LiveLink WG 8 folder.**Continuing**2018-08-09: No action for documents before May 2015, as not considered urgent. **Continuing**2019-08-29: Since no problems reported with lack of pre-2015 documents, further action not justified.**Closed 2019-08-29** |
| 31-03 | Investigate whether LiveLink has the capabilities to accommodate other web pages of the WG 8 web site, such as lists of meetings, “What’s New” page etc. | J.Cogman | March 2016 | Aug 2019 | 2016-Aug-25: **Continuing.**2017-Aug-08: No action to date.**Continuing**.2018-08-09: **Continuing**2019-08-29: Lists of meeting are provided on the LiveLink WG 8 folder. Other features no longer considered important, hence action should be closed**Closed 2019-08-29** |
| 33-01 | Update the front page of the SC 24 Registry to enable additional classes to have links to their contents | F. Mamaghani,J. Cogman | April 2019 |  | 2018-08-09: **Continuing**2019-08-29: **Continuing** |
| 33-02 | Investigate whether persons other than the WG 8 Convenor may edit the LiveLink WG8 document folder. | J. Cogman | April 2019 | Aug 2018 | 2018-08-09: Persons registered in the Convenor Support Team for WG8 may edit the WG 8 Document Folder. Current members: J. Cogman, T.Gifford2018-08-23: T.Gifford replaced by F.Mamaghani in the Convenor Support team. **Closed 2018-08-23** |
| 34-01 | Investigate whether the SC 24 Liaisons stated on the ISO web site correspond with the current ISO Directives, namely:ISO Directives Part 1 – 2018 (9th Edition) defines liaisons at the TC and SC level as;Cat A: Organizations making a contributionCat B: Organizations wishing to be kept informedAnd liaisons at the WG level as;Cat C: Organizations making a technical contribution  | F. Mamaghani,J. CogmanC. Whitlock | June 2019 | Nov 2018 | (Replaces 32-02)Existing SC 24 liaisons are now Cat A, while DGIWG and IHO are Cat C.2018-11-05: ISO web page for SC 24 inspected, confirming that the changes to the liaison categories are now accurately recorded.**Closed 2018-11-05** |
| 34-02 | Before further work proceeds with the development of ‘SEDRIS Visualization using X3D’, WG 8 to discuss the way forward with the team. | F. Mamaghanii | April 2019 | April 2019 | Discussions on the way forward have taken place by email and web conference.**Closed 2019-08-29** |
| 34-03 | Up: Update the SC 24 Register to:* Add registered items for SEDRIS – Part 1
* Add registered items for SRM
* Update BIIF profiles, when requested
* Add new BIIF profiles, when available
 | F. Mamaghani,J. CogmanC. Whitlock | June 2019 |  | 2019-08-29: No action reported.**Continuing** |
| 35-01 | Complete the updates to the EDCS Registry, such that the download function for contents of the Registry may be re-enabled.  | F. Mamaghani,J. Cogman | August 2020 |  | 2019-08-28: Raised at the 2019 WG 8 Working Session**In progress** |
| 35-02 | Send a comparison of the relative attributes of WG 8 and the AG for Systems Integration Visualization to the meeting attendees, to allow review and comment on the options for AG SIV becoming a Working Group | J. Cogman | February 2020 | February 2020 | 2019-08-28: Raised at the 2019 WG 8 Working Session**Closed 2020-02-18** |

[Back to Top](#Top)