
ISO/IEC JTC 1 "Information technology"

Secretariat: **ANSI**

Committee Manager: **Rajchel Lisa Mrs.**



SC 24 Business Plan 2020

Document type	Related content	Document date	Expected action
General document / Other		2020-09-11	COMMENT/REPLY by 2020-11-02

Description

This document is circulated for review and consideration at the November 2020 virtual JTC 1 Plenary

JTC 1/SC 24 Business Report

Computer Graphics, Image Processing and Environmental Data Representation August 2020, covering: Past Year (Aug 2019-Jul 2020) and Current Year (Aug 2020-Jul 2021)

1.0 Executive Summary

The current area of work for SC 24 is summarized as:

Standardization for information technology based functionality relating to:

- computer graphics
- image processing and interchange
- virtual reality, augmented reality, mixed and extended reality
- environmental data representation
- visualization of and interaction with information

Two new Working Groups for SC 24, WG10 (a progression from SC24/AG1) and WG11 (a continuation of the AR/VR work initiated by BSI), were established in August 2020. The Scope of SC 24 has been updated to reflect this, as indicated above.

2.0 Chairman's Remarks

2.1 Market Requirements, Innovation

- A requirement has been identified for the safe and efficient use of AR/VR (Augmented Reality/Virtual Reality) by Enterprises and Consumers. Innovative solutions to meet this requirement are being addressed.
- A requirement is considered to exist for the beneficial use by other standards groups and Industry of existing SC 24 standards in the areas of computer graphics, X3D, image processing, computer vision, the AR/VR Reference Model and the data representation of the environment in which an application is operating.

2.2 Accomplishments

- The status of all standards published by SC 24, together with those under development, may be viewed in the SC 24 Standards Catalogue.
- Two new Working Groups established:
 - o WG 10: Representation and Visualization of Information for Systems Integration
 - o WG 11: Health, Safety, Security and Usability of AR/VR
- Proposed revision of the Scope of SC 24 to reflect these new areas of work.
- The accomplishments of SC 24 with respect to the six Working Groups and JWG16, the Joint Working Group established with ISO TC 184/SC4, are reported below.

2.3 Resources

The strategies adopted by SC 24 are based on a philosophy of cooperatively working with consortia, as indicated below in 2.4.

2.4 Competition and Cooperation (including consortia)

SC 24 continues its cooperative work with other JTC 1 SCs and WGs, ISO TCs and Industry Consortia and Fora that share common objectives within the scope of the SC 24 work area. These include JTC 1/SC 29, JTC 1/WG11, JTC 1/WG12, ISO TC 211, ISO TC 184, the Web3D Consortium, the World Wide Web Consortium (W3C), Open Geospatial Consortium (OGC), Simulation Interoperability Standards Organization (SISO), the SEDRIS Organization and Khronos Group.

3.0 Working Group Reports

3.1 WG 6: Mixed and Augmented Reality (MAR) presentation and interchange

3.1.1 WG 6 accomplishments

- ISO/IEC 19777-1 Ed. 2 CD X3D Language Bindings – Part 1: ECMAScript
- ISO/IEC 19777-2 Ed. 2 CD X3D Language Bindings – Part 2: Java
- ISO/IEC 19777-3 WD X3D Language Bindings – Part 3: C
- ISO/IEC 19777-4 WD X3D Language Bindings – Part 4: C++

- ISO/IEC 19777-5 WD X3D Language Bindings – Part 5: C#

3.1.2 WG 6 deliverables

- ISO/IEC 19774-1: 2019 HAnim (Humanoid Animation) Part 1 – Architecture
- ISO/IEC 19774-2: 2019 HAnim (Humanoid Animation) Part 2 – Motion data animation

3.1.3 WG 6 strategies/risks/opportunities/lessons learned

- In cooperation with the Web3D Consortium, create a revised X3D (19775-1 & 19775-2) with changes needed to better support HTML5 while remaining backwards compatible. Additional technical capabilities will also be added including:
 - o Enhanced sound
 - o Access to and support of glTF
 - o Physics-based rendering
 - o Projective texture mapping
- Provide support for non-HTML environments
- X3D EXI encoding, now that EXI specification is approved by W3C
- X3D JSON encoding
- HL7 FIHR integration, including metadata
- HAnim facial representation
- HAnim internal organ representation
- A Python language binding for X3D (as 19777-6 not yet submitted)
- Support glTF PAS standardization as proposed by the Khronos Group

3.2 WG 7: Image processing and interchange

3.2.1 WG 7 accomplishments

- Continued development of ISO/IEC 12087-5:1998 (BIIF) Ed. 2 revision. Planning to submit NWIP prior to end of calendar year 2020.
- Contributed to the review of SC 24/WG 9 MAR standards and supported the SC 24 Advisory Group on Visualization for Systems Integration (now SC 24/WG 10).

3.2.2 WG 7 deliverables

No standards delivered during the past year (2019-2020)

3.2.3 WG 7 strategies/risks/opportunities/lessons learned

- A draft national standard for computer vision terminology has been established in China. Anticipating submittal to SC 24/WG 7 as a new work item. Will assess the need for additional work related to computer vision standardization following the initiation of this project.
- Registration of an ISO/IEC 12087-5 (BIIF) profile using the “Fast Lossless Extended” (FLEX) compression algorithm (ISO 18381).

3.3 WG 8: Environmental data representation

3.3.1 WG 8 accomplishments

- NWIP and WD approved and registered for ISO/IEC 18041-5 EDCS language bindings – Part 5: C++.
- Draft WD and NWIP documents prepared for ballot for:
 - o ISO/IEC 18042-5 SRM language bindings – Part 5: C++;
 - o ISO/IEC 18024-5 SEDRIS language bindings – Part 5: C++.
- Contributed to the development and review of standards on Mixed and Augmented Reality (MAR).
- Actively participated in the SISO project for RIEDP (Reuse and Interoperation of Environmental Data and Processes).

3.3.2 WG 8 deliverables

No standards have been delivered during 2019-2020.

3.3.3 WG 8 strategies/risks/opportunities/lessons learned

- The WG 8 strategy is to support the use of WG 8 standards in business application standards that make use of data representing the environment in which the application is operating.
- Opportunities for following this strategy exist in standards relating to smart cities, health and safety, AR/VR, and processes for generating and exchanging reusable environmental data products.

3.4 WG 9: Mixed and Augmented Reality (MAR) concepts and reference model

3.4.1 WG 9 accomplishments

- ISO/IEC CD 23844 Material property and parameter representation for model based haptic simulation of objects in virtual, mixed and augmented reality (VR, MAR).
- ISO/IEC CD 3721-1 Information model for mixed and augmented reality (MAR) contents – Part 1: Core objects and attributes.
- ISO/IEC NP 3721-2 Information model for mixed and augmented reality (MAR) contents – Part 2: Augmentation style specification.
- ISO/IEC NP Image based object/environment for virtual/mixed and augmented reality (VR/MAR).
- ISO/IEC 23763 WD Display device interface for mixed and augmented reality

3.4.2 WG 9 deliverables

ISO/IEC 18038: 2020 Sensor representation in mixed and augmented reality.

3.4.3 WG 9 strategies/risks/opportunities/lessons learned

- Improve standardization practices in terms of clarifying the objectives and practical usages and industrial relevance of the current items and also strategically cultivating new future work items along this line.
- Publish a white paper to outline and publicize the clear objectives and industrial benefits of the current work items.
- Actively publicize the MAR reference model (ISO/IEC 18039) and other standards to expand its use in industry.
- Strengthen liaison activities (Web3D, W3C, OGC, Khronos) and collaboration with other SDO's (e.g. IEEE), academic associations (e.g. ACM) and industry fora (e.g. MWC, AWExpo).
- Industry cooperation with Google ARCore, Apple ARKit, WebVR and OpenXR.
- Identify emerging, key strategic areas, e.g. active standardization efforts that are underway in (but not limited to): (1) representation for MAR content/style and elements, (2) MAR performance issues and (3) perceptual and ergonomic aspects for MAR, (4) indoor tracking and benchmarking.

3.5 WG 10: Representation and visualization of information for systems integration

3.5.1 WG 10 accomplishments

- WG 10 was established at the 2020 SC 24 Plenary meeting as a result of AG 1 activity on systems integration visualization.
- Two work items in progress: Guidelines for representing and visualizing smart cities (NP TS 5147); Health information modeling and representation for smart cities (PWI 3982).

3.5.2 WG 10 deliverables

No standards have been delivered during 2019-2020.

3.5.3 WG 10 strategies/risks/opportunities/lessons learned

- WG 10 will work with JTC 1/AG 11, JTC 1/WG 11, JTC 1/ AG 13, and SC 42/WG 2 as required to progress potential work items for digital twin, smart cities, VR training, and big data.
- Liaisons will be created with other groups within ISO and IEC to carry out future new work items. These include IEC TC 100 - Audio, video and multimedia systems and equipment, ISO TC 215 - Health informatics, and ISO/IEC JTC 1/SC 36 - Information Technology for Learning, Education and Training.

3.6 WG 11: Health, safety, security and usability of augmented and virtual reality (AR/VR)

3.6.1 WG 11 accomplishments

- WG 11 was established at the 2020 SC 24 Plenary meeting.
- Two work items in progress: Guidance on immersion time, set up and usage; Guidance on

ensuring devices enhance use of existing PPE and cleanliness requirements

3.6.2 WG 11 deliverables

No standards have been delivered during 2019-2020.

3.6.3 WG 11 strategies/risks/opportunities/lessons learned

- Further opportunities for standards have been identified in the following areas and will be explored:
 - o Guidance for cyber security, privacy protection and online harms prevention for AR/VR;
 - o Ensuring diversity, equality and inclusion when developing Augmented and Virtual Reality hardware and software – Specification;
 - o Process guidance for content capture, content processing, postproduction for AR/VR;
 - o Test specification for robust VR devices.

4.0 Joint Working Group Reports

4.1 Joint Working Group with ISO/TC 184/SC 4 and ISO/TC 171/SC 2: Formats for visualization and other derived forms of product data

4.1.1 JWG16 accomplishments

- ISO/AWI TS 23301 STEP Geometry Services
 - o Proof of concept is currently under implementation in cooperation with Web3D consortium liaison representatives. The results will help to improve the current draft
- ISO/CD TR 24464 Automation systems and integration - Industrial data - Visualization elements of digital twins
 - o DTR ballot was successful. DIS to be submitted to ISO/CS
- ISO/PWI 3151 Visualization components for the PLM-MES interface for plant industry
 - o NP ballot was successful. Work in progress
- ISO/AWI 17506 Industrial automation systems and integration - COLLADA digital asset schema specification for 3D visualization of industrial data
 - o Khronos Group is now A-liaison with ISO/IEC JTC 1/SC 24 and member of JWG 16 with liaison representatives as project leader and editor.
 - o ISO/PAS 17506 moved to ISO template. Under review for bug fixes by Khronos Group during summer 2020 to be submitted to JWG 16 early autumn 2020
- ISO/PWI 14306 Industrial automation systems and integration - JT file format specification for 3D visualization
 - o NWIP ballot for edition 3 not successful. Project team is looking for a project leader. Comment will be reviewed
- Fruitful discussions on the future TR that will succeed to the 2009 SC 4 document on Industrial requirements for product data visualization.

4.1.2 JWG16 deliverables

No standards delivered during the past year (2019-2020).

4.1.3 JWG16 strategies/risks/opportunities/lessons learned

- Manage the transition of technical data packages from 2D drawings on paper to 3D annotated models in multiple formats
- Joint initiative on Geometry and Topology ontology at ISO/TC 184/SC 4 with WG 12/T 1 geometry and topology, WG 3 Oil, Gas, Process and Power and JWG 16. DTR in progress
- Establish visualization requirements for product and plant data, and in general for Digital Twins in cooperation with other ISO and IEC committees: ISO/IEC JTC 1/AG 11, ISO/IEC JTC 1/AG 13, ISO/IEC JTC 1/WG 12, ISO/TC 59/SC 13 (BIM)