

ISO/IEC JTC 1
Information technology
Secretariat: ANSI (United States)

Document type: Business Plan

Title: SC 24 Business Plan for the period August 2013 - July 2014

Status: This document is circulated for review and consideration at the November 2013 JTC 1 Plenary meeting in France.

Date of document: 2013-09-26

Source: SC 24

Expected action: ACT

Action due date: 2013-11-04

Email of secretary: lrajchel@ansi.org

Committee URL: <http://isotc.iso.org/livelink/livelink/open/jtc1>

Your ref.: JCC

Date: 2013-09-24

Secretariat of ISO/IEC JTC 1/SC 24

"Computer graphics, image processing and environmental data representation"

Title: SC 24 Business Plan for 2013-14

Source: ISO/IEC JTC 1/SC 24 Secretariat

Replaces: N 3509

Document Type: Business Plan

Status: Draft version based on the information provided at the ISO/IEC JTC 1/SC 24 Plenary meeting, Sydney, Australia on 2013-08-30.

Action ID: For review and approval by National Bodies, prior to formal submission to JTC1.

Due Date: To be submitted to JTC 1 by 2013-09-27

Distribution: P, O, L Members,
Secretariat JTC 1, ITTF,
SC 24 Chairman, WG Convenors, National Bodies

Date of Distribution: 24 September 2013

Distribution Medium: Web

BUSINESS PLAN FOR JTC 1/SC 24

COMPUTER GRAPHICS, IMAGE PROCESSING and ENVIRONMENTAL DATA
REPRESENTATION

PERIOD COVERED:

August 2013 to July 2014.

SUBMITTED BY:

Prof.. Ha Jine Kimn ISO/IEC JTC 1/SC 24 Chairman

Dr. Charles. Whitlock ISO/IEC JTC 1/SC 24 Secretariat

1 MANAGEMENT SUMMARY

1.1 CHAIRMAN'S REMARKS

This version of the 2012-2013 Business Plan is the result of updates based on information provided at the SC 24 Plenary, Sydney, Australia on 2013-08-30 and a subsequent review by the National Bodies, prior to being submitted to JTC 1.

1.2 JTC 1 SC 24 SCOPE of WORK

1.2.1 SC 24 Statement of Scope

The current scope for JTC 1/ SC 24 (Computer graphics, image processing and environmental data representation) was approved at the JTC 1 Plenary in San Diego on 7-12 November 2011 (Resolution 42) and is as follows:

Area of Work: Standardization of interfaces for information technology based applications relating to:

- computer graphics,
- image processing,
- environmental data representation,
- support for the augmented reality continuum (ARC), and
- interaction with, and visual presentation of, information

Included are the following related areas:

Modeling and simulation, related reference models; virtual reality with accompanying augmented reality/augmented virtuality aspects, related reference models; application program interfaces; functional specifications; representation models; interchange formats, encodings and their specifications, including metafiles; device interfaces; testing methods; registration procedures; presentation and support for creation of multimedia, hypermedia, and mixed reality documents.

Excluded:

Character and image coding; coding of multimedia, hypermedia, and mixed reality document interchange formats; JTC 1 work in user system interfaces and document presentation; ISO TC 207 work on ISO 14000 environment management, ISO TC 211 work on geographic information and geomatics; and software environments as described by JTC 1/SC 22.

1.2.2 SC 24 Working Groups

The scope of work for JTC 1/SC 24 is implemented by the following Working Groups;

1.2.2.1 WG 6: Augmented reality continuum (ARC) presentation and interchange

Terms of reference:

- Standardization of computer graphics functional specifications for application program interfaces to include support for ARC
- Standardization of techniques for presentation of ARC multimedia information, including its creation, and support for user interaction
- Standardization of interfaces for storage, retrieval and interchange of ARC multimedia objects
- Standardization for graphical information exchange, including computer graphics metafiles and computer graphics device interfaces
- Standardization of encodings and language bindings for standards developed within WG 6

1.2.2.2 WG 7: Image processing and interchange

Terms of reference:

- Development of Imaging Architecture to include support for use of images in ARC
- Processing of digital images with and without ARC components
- Interchange and storage of digital images
- Imaging techniques (components) in IT frameworks like multimedia, electronic mail, windowing, hypermedia, ARC objects and documents
- Profiling of generic specifications for use in specific application domains

1.2.2.3 WG 8: Environmental data representation

Terms of reference:

- To define standards for environmental data elements, including presentation properties, and their relationships in the context of a data representation model.
- To define standards for data interchange between environmental data providers and consumers.
- To define standards for spatial referencing and environmental data identification, analysis and reuse.

1.2.2.4 WG 9: Augmented reality continuum concepts and reference model

Terms of reference:

- To identify the architectural elements of Augmented Reality Continuum (ARC)
- To study the relationships between ARC architectural elements and define appropriate interfaces between them

- To develop a general purpose reference model that shows the ARC architectural elements along with their interrelationships
- To study and identify one or more abstract levels that can support platform independence over a wide variety of platform types
- To identify available standards that support one or more of the ARC architectural elements
- To provide a focal point for ARC discussions within SC 24.

1.3 PROJECT REPORT

1.3.1 Programme of Work

A brief summary of the SC 24 projects, current and completed, is given in this sub-section and by the programme of work in [Annex A](#).

1.3.2 Active current work:

18025:201x	EDCS Ed. 2
18026;201x	SRM Ed. 3
18041-4:201x	EDCS LB Ed. 3
18521-1:201x	MAR reference model
18521-2:201x	MAR physical sensors
18521-3:201x	MAR real character representation
19775-1:2013	X3D architecture and base components Ed. 3
19775-2:201x	X3D scene access interface Ed. 3
19776-1:201x	X3D encodings—XML Ed. 3
19776-2:201x	X3D encodings—Classic VRML encoding Ed. 3
19776-3:201x	X3D encodings—Compressed binary Ed. 3

1.3.3 Published standards

The SC 24 published standards are listed at the ISO web site:

http://www.iso.org/iso/home/store/catalogue_tc/catalogue_tc_browse.htm?commid=45252

1.4 CO-OPERATION AND COMPETITION

SC 24 continues its co-operative work with other JTC 1 SCs, ISO TCs and Industry Consortia and Fora that share common objectives within the scope of the SC 24 work area. These include ISO TC 211, JTC 1/SC 29, Steering Committee on Image Technology (SCIT), the Web3D Consortium, the World Wide Web Consortium (W3C), Open Geospatial Consortium (OGC) and the SEDRIS Organization.

The liaison organizations and their relationship to SC 24 are illustrated by the diagram shown in [Annex B](#).

1.4.1 Applicable to all SC 24

In order to support joint work between JTC 1/SC 24 and ISO TC 211 in the areas of metadata for imagery, gridded data, the ISO Geodetic Registry Network and environmental data catalogues, a Joint Task Force (JTF) was established between ISO TC 211 and JTC 1/SC 24 in 2005. Although the JTF has been inactive over the past few years, SC 24 has authorized a number of its members to act as subject matter experts in JTF matters, should the need arise.

In order to develop a common reference model for Mixed and Augmented Reality (MAR), a Joint Ad hoc Group (JAhG) has been established between JTC 1/SC 24 and JTC 1/SC 29. The first meeting was held in March 2013 and the second in July 2013.

In order to remain current with image technology work being performed by other TCs and SCs, SC 24 participates in the meetings and activities of SCIT (Steering Committee on Image Technology).

1.4.2 WG 6: Augmented Reality Continuum (ARC) Presentation and Interchange

In co-operation with the Web3D Consortium, several Extensible 3D (X3D) projects have been advanced as transposed standards. Five of these standards are being revised and have been authorized for registration as DIS or FDIS during the preceding year. Editions 3 of the following standards are either in preparation or in ballot: ISO/IEC 19775-1:201x, ISO/IEC 19775-2:201x, ISO/IEC 19776-1:201x, ISO/IEC 19776-2:201x, and ISO/IEC 19776-3.2:2011.

New Work Item Proposals and PDAM text for each part of ISO/IEC 19777 (X3D language bindings) is expected soon to correspond to changes introduced by the amendment to ISO/IEC 19775-2:201x and resulting from changes in the corresponding language standards.

New Work Item Proposals for Edition 2 of ISO/IEC 19774 are in ballot. It is proposed that ISO/IEC 19774:2005 be revised and become Part 1 of Edition 2. Part 2 would then add functionality for supporting motion capture.

1.4.3 WG 7: Image Processing and Interchange

In direct co-operation with ISO TC 211, standards dealing with metadata are being developed. These are significant to the contribution of multi-consortia metadata harmonization and crosswalks and include the following TC 211 imagery content standards;

- ISO 19130-2 Geographic Information – Imagery sensor models for geopositioning, Part 2: SAR/InSAR, LIDAR and SONAR
- ISO 19139-2 Geographic Information – Metadata – XML Schema Implementation, Part 2: Extensions for Imagery and Gridded Data
- ISO 19159 Geographic Information – Calibration and Validation of Remote Sensing Imagery Sensors, Part 1: Optical Sensors

The North Atlantic Treaty Organization (NATO) Joint Capability Group for Intelligence, Surveillance and Reconnaissance (JCGISR) proves to be a primary user of the WG7 standards and employs them in data capture and exchange systems, generating interoperability architectures that can be adopted or adapted to other user applications. The ongoing relationship between SC 24, TC211 and JCGISR serves to provide expert assistance and to assure the application of interoperable standards as a result of this three-way relationship.

Additional topics that are of interest to SC 24/WG 7 as co-operative efforts include:

- Development of standards that support data from spectral, optical, radar, laser, polarimetric and other advanced remote sensors that can be portrayed and

fused with imagery. These elements also carry over into the developing work proposals for Augmented Reality in aspects of enriching imagery/sensed data that carry geospatial characteristics and can be enhanced by correlating synchronous or analogous information.

- Expanding and increasing application of satellite imagery and remotely sensed data, for power and site planning, assessment and monitoring purposes
- Application of remote sensing in non-stationary platforms such as Unmanned Aeronautical Vehicles (UAVs), hand-held devices such as mobile phones and digital cameras
- Environment management applications
- Application of image processing and computer vision for home, social life, and industry, such as home security systems, intelligent robots, automated inspection systems and autonomous navigation systems.

SC 24/WG 7 continues to seek ways to co-operate with JTC 1/ SC 29. Work within this SC 24 reporting period includes incorporation of implementation of SC 29 JPEG 2000 standards used inside the BIIF standard. As new spectral data types are defined and formatted for dissemination and exploitation, compression of these data types is required; SC 24/WG 7 looks to SC 29 to conduct these standardization projects, including earth surface models (terrain elevations), LIDAR, Synthetic Aperture Radar (SAR), hyper-spectral data and applications of International Standards Organization - Open Systems Interconnection Model 7(ISO/IEC 7498-1).

1.4.4 WG 8: Environmental Data Representation

As part of the Co-operative Agreement with the SEDRIS Organization, standards relating to SEDRIS technology have been developed, published and are subsequently being enhanced. The main aim of SEDRIS technology is to address the representation and interchange of environmental data, both real and virtual. To support a data representation model, an Environmental Data Coding Specification (EDCS) provides unambiguous ways in which to specify environmental features and their attributes and a Spatial Reference Model (SRM) provides unambiguous ways in which to specify locations and their related data.

SEDRIS standards, either as a whole or as independent components, may be applied to work in other areas. Examples are use in WG 6 and in committees and organizations external to SC 24.

WG 8 participates in the mixed and augmented reality Joint Ad hoc Group (JAhG), since the SEDRIS standards are equally applicable to real and virtual environments, hence are well suited to mixed reality applications.

SC 24/WG 8 liaises with the NATO Modelling and Simulation Group (NSMG), the Simulation Interoperability Standards Organization (SISO) and the Defence Geospatial Information Working Group (DGIWG). It remains current with the publications of the World Meteorological Organization (WMO) and International Hydrographic Organization (IHO).

1.4.5 WG 9: Augmented Reality Continuum Concepts and Reference Model

Working Group 9, established at the 2011 SC 24 Plenary on 2011-08-26, cooperates with other SC 24 Working Groups, the Web 3D Consortium, SC 29 and appropriate ISO and ISO/IEC committees in the areas of virtual, augmented and mixed reality.

V c

2 PERIOD REVIEW

In the Business year 2012 to 2013, the achievements of JTC1 SC 24 were principally related to the advancement of published standards.

2.1 MARKET REQUIREMENTS

The Information and Communication Technology (ICT) fields that are addressed by the standards developed in SC 24 are summarized 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 and displays;
- geospatial and geopolitical applications with metadata and data layering;
- 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 environments applications in modeling and simulation.
- and visual applications in which data captured from the real world is mixed with virtual data, such as computer graphics and sound, to produce mixed and augmented reality.

Market requirements where SC 24 can play a major role in standards development are identified as:

- The need for a reference model for mixed reality applications to provide a framework upon which all mixed and augmented reality systems may be based.
- The development of effective multi-vendor, cross-platform cross-application data interchange formats that combine data objects and metadata for interchange. Our work with ISO TC 211, Geographic information/Geomatics, and NATO establish applications of BIIF, CGM, and SEDRIS technology standards. We are meeting existing market requirements in national security, satellite and airborne imaging communities. Expansion into electronic or intelligent documents, biometrics, and medical imaging communities is still within the objectives for SC 24.
- SC 24 recognizes that the market for commercially available, remotely sensed imagery is now tangible and available to the general public. Satellite imagery based on ISO/IEC 12087-5 Basic Imagery Interchange Format (BIIF) is produced commercially by three companies and can be purchased on the Internet.
- Spectral sensing and fusion of collected information with imagery is an emerging segment in the market sector of Information and Communications Technology. SC 24 establishes and maintains correspondence with sensor developers and the user community through its national and liaison bodies. This concept appears to be present in the concepts of Mixed and Augmented Reality, which SC 24 is building into its Programme of Work.
- Application of remote sensing in non-stationary platforms, such as Unmanned Aeronautical Vehicles (UAVs), have strong application requirements to incorporate metadata into the imagery/sensed data files. This will enable the incorporation of not only the location, dates and times of the collected image, but also features of the image.
- Increased use of satellite and remote imagery will offer improvements for environment management applications in resource development, for human and natural environments and for modeling climate change and assessing its impact.
- Opportunities exist for the application of image processing for home, social life, and industry uses, such as home security systems, intelligent robots, computer vision systems and automated inspection systems.

- Opportunities exist for the application of autonomous navigation systems to intelligent robots and unmanned vehicles.
- Imagery exploitation methods need to be able to process terabytes of collected imagery and remotely sensed data that generate requirements to automate exploitation and analysis capabilities. SC 24 is developing links to research enterprises in the light of developing standardization projects in this area of image processing.
- Continue the standardization of Internet protocols and interfaces to provide effective 2D and 3D graphical interaction. Widespread commercial adoption of VRML, Humanoid Animation, and X3D technologies is evident in both large and small companies. Our continuing work on VRML and X3D are examples where SC24 has been successful. These forms of standards work are the highest of objectives held by the SC24 National Bodies.
- Continue to support the Web3D Community by working in partnership with the Web3D Consortium to evolve the base X3D standard and to advance other specifications of 3D and interactive web-based techniques. Over the past five years SC 24 has progressed a number of Web3D initiatives including revised X3D functional specifications to add new functionality; X3D encodings and X3D language bindings. Work is underway to revise X3D to add additional functionality to support additional CAD, Geospatial, Medical, and Augmented Reality requirements.
- Longer term work is underway to adapt the concepts that exist in an experimental project, X3DOM, to provide more intimate integration with forthcoming HTML 5 capabilities. X3DOM is a technology that uses HTML5 capabilities including WebGL and the DOM to support an implementation of an effective subset of X3D in ECMAScript. In this manner, modern web browsers can support large parts of X3D without requiring a plug-in.
- Recognize areas that can benefit from standards for the representation of environmental data that were developed in co-operation with the SEDRIS Organization. The aim is to extend the use of these standards, which were initially developed for military and government applications, into widespread civilian and commercial use.
- It is accepted that the market no longer recognizes any distinction between environmental data for the real world and environmental data for a virtual world. This requirement is addressed by SC 24 standards for environmental data, which are applicable equally to data for live, virtual and constructive situations, as well as to augmented reality.

2.2 ACHIEVEMENTS

In the period since August 2012, SC 24, the development of International Standards has progressed as follows:

2.2.1 Documents published:

9973:2013	Procedures for registration of items

2.2.2 Documents approved for publication:

--	--

2.2.3 Documents approved for progression to FDIS/FDAM during the last planning year:

18025 Ed. 2	Environmental Data Coding Specification (EDCS)
18026 Ed. 3	Spatial reference model (SRM)
19775-1 Ed. 3	Extensible 3D (X3D)—Part 1: Architecture
19775-2 Ed. 3	Extensible 3D (X3D)—Part 2: Scene access interface

2.2.4 Documents approved for progression to DIS/FPDAM during the last planning year:

18041-4 Ed 3	Environmental Data Coding Specification (EDCS) Language Binding in C
19776-1 Ed. 3	Extensible 3D (X3D) encodings—Part 1: XML
19776-2 Ed. 3	Extensible 3D (X3D) encodings—Part 2: Classic VRML
19776-3 Ed. 3	Extensible 3D (X3D) encodings—Part 3: Compressed binary

2.2.5 Documents approved for progression to CD/PDAM during the last planning year

18041-4 Ed 3	Environmental Data Coding Specification (EDCS) Language Binding in C
--------------	--

2.2.6 Registration Actions:

- The BIIF profile for Computer Graphics Metadata (BPCGM) was registered to replace US MIL_STD 2301A, Computer Graphics Metafile establishing reference to civil standards.
- *EDCS Register Submissions*. Five submission batches have been evaluated and are waiting to be balloted. A further batch of EDCS submissions (2011-Q1) has been evaluated by the Rapporteur Group, but is not complete, as feedback is still awaited from the submitter.

Approved Register Classes:

Acknowledgment Type	Linetype
Annotation Style	Markertype
Application Structures	Measure Format Identifier
Colour Model	Modeling Clipping Operators
Compression Type	Patterns
Echo Type	Prompt & Echo
EDCS (set of classes)	Prompt Type
Edge Type	Selection data type selector
Error	Set data type member

Escape	SRM (set of classes)
GDP	Textfont
GDP-3	BIIF Profile
Generalized Structure Element	CGM Profile
Hatchstyle	EDCS Profile
Interpolated Interior Style	PIKS Profile
Line Caps	SRM Profile

Classes with approved entries, and number registered:

Colour Model, 3 registered items
 Compression Type, 3 registered items
 EDCS (set of classes), see following section
 Error, 11 registered items
 Escape, 47 registered items
 GDP, 5 registered items
 GSE, 9 registered items
 Hatchstyle, 19 registered items
 Linetype, 16 registered items
 Markertype, 26 registered items
 BIIF Profile, 4 registered profiles
 CGM Profile, 2 registered profiles
 SRM (set of classes), see SRM classes section
 SEDRIS - Part 1 (set of classes), see SEDRIS classes section

EDCS classes and number registered:

EDCS classification (EC)	(51 items in register, 0 transferred to standard)
EDCS attribute (EA)	(55 items in register, 0 transferred to standard)
EDCS attribute enumerant (EE)	(86 items in register, 0 transferred to standard)
EDCS attribute value characteristic (EV)	(0 items in register, 0 transferred to standard)
EDCS unit (EU)	(0 items in register, 0 transferred to standard)
EDCS unit equivalence class (EQ)	(0 items in register, 0 transferred to standard)
EDCS organizational schema (EO)	(0 items in register, 0 transferred to standard)
EDCS group (EG)	(0 items in register, 0 transferred to standard)
EDCS Profile	(0 items in register, 0 transferred to standard)
EDCS References	(11 items in register, 0 transferred to standard)

SRM classes:

SRM Abstract coordinate system (CS)
 SRM Temporal coordinate system
 SRM Reference datum (RD)
 SRM Object reference model template (ORMT)

SRM Object reference model (ORM)
SRM Reference transformation (RT)
SRM Object binding rule set (OBRS)
SRM Spatial reference frame template (SRFT)
SRM Spatial reference frame (SRF)
SRM Spatial reference frame set (SRFS)
SRM Designated spatial surface (DSS)
SRM Profile

There are currently no registered items for SRM classes, nor have any been submitted to the Registry.

SEDRIS classes:

Selection data type selector
Set data type member

There are currently no registered items for SEDRIS classes, nor have any been submitted to the Registry.

2.3 RESOURCES

The strategies adopted by SC 24 are based on a co-operative philosophy of working with consortia. Many of the projects within SC 24 are introduced into the programme following the accomplishment of early-stage work by the consortia. Experience in SC 24 has demonstrated that co-operative partnering with consortia, whose work is consistent with the SC 24 scope of work, has contributed greatly to both the technical content and SC 24's ability to develop applicable and relevant International Standards. As a result, many consortia members continue to serve as project co-editors, resulting in an increased base of SC 24-trained ISO editors. Improving and expanding this expertise continues to be a priority for SC 24. We are grateful for the continued expert assistance provided by the BSI Secretariat. SC 24 benefits from the cross-cultural interplay that demands a more worldwide view of our work and ideology. Continued support from BSI on this part of the resource equation is critical to the continued high quality endeavors of SC 24.

2.4 ENVIRONMENTAL ISSUES

The work of SC 24 has no negative impact on the environment in terms of resource consumption, pollution or waste generation. SC 24 standards will continue, however, to provide facilities beneficial to the environment, where possible. The following examples are given of SC 24 facilities considered to be beneficial to the environment.

SC 24 standards, such as ISO/IEC 12087-5 format (BIIF), are routinely used to capture and exchange imagery of the Earth, making such data a tangible commodity and subsequently allowing the data to be shared within the general consumer sector in various formats.

Resource consumption patterns are also reduced by the application of SC 24 standards in the depiction, development, and sharing of virtual and simulated environments and integrated humanoid interactions. Modeled and simulated environments, using various SC 24 standards, such as the SEDRIS related standards ISO/IEC 18023, 18024-4, 18025, 18026, 18041-4 and 18042-4, facilitate training events with minimal or no expenditure of equipment or environmental degradation. Training facilities and technologies can be reused and enhanced in localized sites. Networked facilities support training engagements that link capabilities and prove the interoperability of applied standards implementations. Simulation thus allows training exercises to be performed without the need to drive vehicles over the terrain, fly aircraft through the air, consume fuel, deploy ammunition or utilise other effects that are harmful to the environment.

The net result from implementation of the SC 24 standards provides a positive means of aiding environmental solutions and reducing resource consumption.

2.5 PARTICIPATION METRICS

There are 10 “P” members of SC 24 and 23 “O” members. Of these, the following NBs actively participate;

- Australia
- China
- Korea
- Japan
- United Kingdom
- United States

The other “P” members are;

- Egypt
- France
- Portugal
- Russia

The 50% voting requirement has been met on all ballots.

3 FOCUS FOR NEXT WORK PERIOD

SC 24 will focus on the progression of the following projects;

- Developing a reference model standard for mixed and augmented reality applications, covering the entire physical to virtual reality continuum (WG 9)
- X3D standards and amendments (WG 6)
- H-Anim standard revision (WG 6).
- Complete the revision of ISO/IEC 18026 Spatial Reference Model (WG 8).
- Complete the revision of ISO/IEC 18025 Environmental Data Coding Specification (WG 8)
- Complete the revision of ISO/IEC 18041-4 Environmental Data Coding Specification Language Binding (WG 8)
- Registration of items by WG 6, WG 7 and WG 8

3.1 DELIVERABLES

The following table contains the major deliverables for the period August 2013 to September 2014 :

Deliverable	Standard	Estimated Registration or Publication Date
IS	18025 Environmental Data Coding Specification Ed. 2	January 2014
FDIS/IS	18026 Spatial Reference Model Ed. 3	September 2014
DIS	18041-4 EDCS Language Binding, Ed. 3	May 2014
CD	18521-1 MAR Reference Model	January 2014
DIS	18521-1 MAR Reference Model	August 2014
CD	18521-2 MAR Physical Sensors	January 2014
CD	18521-3 MAR Real Character Representation	January 2014
IS	19775-1 X3D architecture Ed. 3	December 2013
FDIS/IS	19775-2 Scene Access Interface (SAI) Ed. 3	January 2014
FDIS/IS	19776-1 2 X3D encodings—XML encoding Ed. 3	February 2014
FDIS/IS	19776-2 X3D encodings—Classic VRML encoding ED. 3	February 2014
FDIS/IS	19776-3 X3D encodings—Compressed binary encoding Rev. 3	February 2014

3.2 STRATEGIES

The SC 24 mission is to apply resources effectively to assist all segments of the worldwide computer graphics, image processing and environmental data representation communities in the development of International Standards.

To achieve this mission, the following strategies are employed:

- explore means to facilitate the use and implementation of existing SC 24 standards
- seek out those consortia and other organizations that follow open processes as our partners;
- manage our work effectively, applying measures of effectiveness that include timeliness and window of market opportunity as well as technical quality;
- maximize our contribution by seeking out those new and innovative projects where we can add substantial value; and
- continue to seek ways to co-operate with other JTC 1 SCs and ISO TCs, especially SC 29 and TC 211.

These strategies are in keeping with the JTC 1 Business Plan, which has identified two distinct categories of standards that are needed:

- those where stability and ongoing maintenance are not an issue
- standards which establish a longer-term system and interface concept to achieve interoperability and to secure investment into individual products and where, as a result, stability and maintenance are of great importance.

3.2.1 Risks

Work in newer areas of technology under tight time constraints inherently involves substantial risks. One such risk is that a standard may become irrelevant due to changes in market direction. At present, due largely to the volunteer nature of our organization, there is no effective way to redirect resources. It is mitigated to some extent by having a sufficient number of experts and countries who remain willing to continue work on a project.

There is a risk that the source of funding which enables editorial work to continue may be delayed, reduced or terminated to the detriment of the project, due to budget constraints or for commercial reasons. It is mitigated by a continual search for alternative sources of funding.

There is a risk that a standard will not be able to adapt to keep pace with new requirements in a sufficiently short timescale. To address this risk, SC 24 has developed a Register of Items for the identification of dictionary items, implementation profiles and data coding profiles. This is currently supported by the ISO MA/RA web-site and is publically accessible at;

<http://www.iso.org/jtc1/sc24/register>

A further risk is of the lack of support for a co-operative development because a partner has a change of objectives and direction. This risk is mitigated by attempting to establish co-operative agreements that ensure that standards projects are well-evolved, hold the commitment of the commercial community and provide valid standards for information and communication technologies.

3.2.2 Opportunities

Opportunities for further SC 24 standards development are described with respect to:

- Cooperation with government agencies
- Cooperation with liaison organizations and external ISO committees
- Specific work opportunities

3.2.2.1 *Cooperation with government agencies*

SC 24 is leveraging its work programme with government agencies to increase government investments into Standardized Commercial Off the Shelf (COTS) technologies. Government agencies recognize that they must participate at the development level in order to ensure that government level requirements are addressed and incorporated as appropriate.

Topics of technical interest to SC 24 that support government policies include:

- Development of standards that describe data from spectral, radar, laser, polarimetric and other advanced remote sensors that can be portrayed and fused with imagery;
- Application of standardized metadata for imagery in support of data archival, discovery and retrieval
- Exploitation capabilities to apply to imagery and remotely sensed data, which includes methods of augmented reality and mixed reality.
- Application of standards for the representation, development, search, and sharing of integrated environmental data.

- Development of standards that help achieve interoperability of environmental data representations between heterogeneous applications.
- Development of standards that promote the unambiguous, loss-less and non-proprietary representation of environmental data.

3.2.2.2 Cooperation with liaison organizations and external ISO committees

In keeping with the JTC 1 objective to anticipate technology trends, SC 24 follows developments from its cooperative agreements to build ISO standards from ISO committees and mature consortia. The following examples are given of such cooperative opportunities:

- The SEDRIS Organization, with which we sustain a well-established and productive co-operative relationship;
- The Web3D Consortium, with which we sustain a well-established and productive co-operative relationship;
- The WWW Consortium (W3C) with which we sustain a well-established and productive co-operative relationship;
- The military, aerospace and defense community world-wide, with which we have a well established and productive co-operative relationship, including: NATO Air Force Armaments Group (NAFAG) Joint Capability Group for Intelligence, Surveillance and Reconnaissance (JCGISR); the Digital Geographic Information Working Group (DGIWG); US NITFS Technical Board (NTB) for US Military National Imagery
- ISO/IEC JTC 1/ SC 29: Coding of moving pictures and audio. Transmission Format Standards, based on the imagery file formats, metadata, and implementation of compression methodologies adopted from SC 29, and other imagery formats, are being evaluated for work within SC 24.
- ISO/IEC JTC 1/SC 29 and other SDOs: Continue the work of the Joint Ad hoc Group on Mixed and Augmented Reality in order to publish a reference model standard that is widely adopted.
- ISO TC 211: Geographic information/Geomatics. This technical committee produces standards which are complementary to those of SC 24 and with whom we have established a Joint Task Force.
- The Simulation Interoperability Standards Organization (SISO). This organization has established an Environmental Data Representation Standards Product Support Group (EDRS PSG) to represent the modelling and simulation community interest in the SEDRIS and other standards involving the representation and mediation of environmental data. It is SISO's intention to work closely with SC 24 in the areas of maintenance and implementation of the SEDRIS standards. SISO was previously active in the development and approval of WG 8 standards.
- The Khronos Group. The work is based on authoring and playback of dynamic media in WG 6, with which we have initiated a co-operative relationship, and based on mutual interest in the Augmented Reality Continuum work in WG 9;

3.2.2.3 Specific work opportunities

- X3D (SC24 transposition of Web3D Consortium specification in cooperative agreement): This work will augment the capabilities already provided by X3D (and previously by VRML). WG6 anticipates proposals for defining a new annotation component, better interfacing with medical imagery including support for multi-planar reconstruction, multi-user virtual environments, improved integration with other multi-industry capabilities, and enhanced compatibility with the Khronos Group Collada products, all work to be coordinated through Web3D.

- Releases from Web3D are yielding growth in the business community, continuing to expand the capabilities of 3D on the Web while establishing Standards-based Commercial Off-The-Shelf models for Web3D and SC24. X3D is also highly configurable so that conformant profiles can be created that adapt readily to the requirements of particular data domains. Web3D has nearly completed Edition 3 of ISO/IEC 19775 Parts 1 & 2, has nearly completed work on Edition 3 of ISO/IEC 19776 Parts 1, 2 & 3, and has initiated work to revise ISO/IEC 19777 Parts 1 & 2. In addition, consideration is underway for developing an ISO/IEC 19776 Part 4 to support recent W3C work on EXI—Efficient XML Interchange, a more efficient method of supporting binary representations of XML-encoded content.
- Humanoid Animation (SC24 transposition of Web3D Consortium specification in cooperative agreement): This specification provides an important element of Modeling and Simulation technology by establishing a standardized representational set of humanoid models which can be interchanged and reused among modeling, authoring and run-time applications. H-Anim technology is already embedded in a variety of commercial projects. Additional work is underway to facilitate the sharing of avatars, providing exportable standard behaviours for the avatars, the migration of avatars between virtual environments and improved compatibility with avatar design applications. Work is also underway to enhance the H-Anim specification to standardize support for motion capture information in a manner that will allow the interchange of motions to different avatars. NWIPs to initiate these projects are in ballot.
- Electronic document archiving, discovery and retrieval: This work will establish sets of parameters by which digital documents can be stored in their native format and, using consensus-based xml schemas compliant with ISO TC 211 metadata standards, discovered and retrieved. Topics of standardization in imagery and environmental data archiving and distribution continue to hold interest for SC 24.
- Data Encapsulation: Using sensed data formats and metadata profiles, this work continues as a means to collect data in various formats and multi-sensors. This work requires collaborative development with multiple data domains and types. Commercial producers of remotely sensed data (satellite imagery), NATO JCGISR and the NITF Technical Board will also act as technical resources to progress this work.
- Biometrics: This work is being taken on in a variety of JTC1 efforts, most importantly with SC 37. The establishment of SC 37 is considered by SC 24 as a positive step for ICT standards and recognized as a high potential for cooperative work, as SC 24 continues to engage in the development and application of imaging perspectives of this technology.
- Spectral data: SC 24 recognizes that spectral sensing and its fusion with imagery are an ever more important part of Information and Communications Technology.
- Imagery exploitation methods: Increased volumes of collected imagery establish the requirement to automate exploitation and analysis of imagery. SC 24 is developing links to research enterprises in the light of developing standardization projects.
- Adaptation of compression algorithms: SC 24 also works to leverage the wavelet compression capabilities standardized within JTC 1/SC 29.
- Expanding the functionality of the Spatial Reference Model (ISO/IEC 18026) to include a comprehensive treatment of the concepts of orientation, rotation, and vector quantities, along with the corresponding additions to the SRM API. Also included will be the provision of similarity transformations and a more in-depth treatment of the geodesic concept and its measurement. (Currently being addressed in 18026 Ed. 3)

- Enhancing the usability of the EDCS (ISO/IEC 18025) to include pictures in the dictionaries where they would ease the understanding of concepts. (Currently being addressed in 18025 Ed. 2)
- New capabilities being introduced into both EDCS and SRM would require the remaining standards in the SEDRIS suite to incorporate these things.
- Considerations for inclusion of standardized methods to generate 3D landforms automatically or semi-automatically with substantially reduced storage requirements.
- Registry of items: With the commercial adoption of standards produced within SC 24, there is an expansion of application of registries for data and implementation profiles. This is reflected in the on-going activities of the various SC 24 registries.

3.3 WORK PROGRAMME PRIORITIES

The work programme priorities for SC 24 in the year 2013-14 are:

For WG 6:

- Revisions to the Humanoid Animation standard, ISO/IEC 19774.
- Revisions to the X3D standards, ISO/IEC 19775, 19776, and 19777.

For WG 7:

- Development of standards that process and describe data from spectral, optical, radar, laser, polarimetric and other advanced remote sensors that can be portrayed and fused with imagery;
- Application of standardized metadata for imagery in support of data archival, discovery and retrieval
- Exploitation capabilities to apply to imagery and remotely sensed data.

For WG 8:

- Implementation of the revisions to the EDCS standard, ISO/IEC 18025, and its language binding, ISO/IEC 18041-4.
- Implementation of the revision to the SRM standard, ISO/IEC 18026.
- Assess the changes needed to other standards in the SEDRIS family in order to make them compatible with the revised versions of 18025 and 18026.

For WG 9:

- Development of a reference model for Mixed and Augmented Reality, in association with SC 29 and related liaison organizations
- Assessment of the application of existing SC 24 standards, produced by other working groups, to Mixed and Augmented Reality, since many of these standards are already applicable to both real and virtual data.

3.3.1 Archival Policy

The archival policy of SC 24 is administered by the UK Secretariat in accordance with BSI policy, as defined by BS 0, which conforms to the JTC 1 and ISO policies for archiving.

Annex A

Work programme for ISO/IEC/JTC 1/SC 24

Secretariat : BSI

2013-08-30

Short Title	Reference	WG	Editor	CD/PDAM/PDTR	DIS (FCD)/FPDAM	FDIS/FDAM/DTR	IS*/Amd/TR
EDCS Ed. 2	ISO/IEC 18025:201x	8	Cox, Hembree, Worley	5/11	9/12	7/13	1/14
SRM Ed. 3	ISO/IEC 18026:201x	8	Berner, Toms, Trott	6/11	10/12	9/14	3/15
EDCS LB Ed. 3	ISO/IEC 18041-4:201x	8	Puk	6/13	5/14	10/14	4/15
X3D Architecture Ed. 3	ISO/IEC 19775-1:2013	6	Puk, Lee, Brutzman (Web3D)	7/11	4/12	7/13	11/13
X3D Scene Access Interface (SAI) Ed. 3	ISO/IEC 19775-2:201x	6	Daly (Web3D), Puk	3/12	7/13	1/14	7/14
X3D Encodings XML encoding Ed. 3	ISO/IEC 19776-1:201x	6	Brutzman (Web3D), Puk	9/11	9/13	2/14	8/14
X3D Encodings Classic VRML encoding Ed. 3	ISO/IEC 19776-2:201x	6	Puk, Daly (Web3D)	8/11	9/13	2/14	8/14
X3D Encodings Compressed binary encoding Rev. 3	ISO/IEC 19776-3:201x	6	Puk, Brutzman (Web3D)	9/11	9/13	2/14	8/14

Short Title	Reference	WG	Editor	CD/PDAM/PDTR	DIS (FCD)/FPDAM	FDIS/FDAM/DTR	IS*/Amd/TR
ARC Concepts and Reference Model Part 1: Reference Model	ISO/IEC 18521-1	9	Kim, Preda	1/14	8/14	12/14	8/15
ARC Concepts and Reference Model Part 2: Physical Sensors	ISO/IEC 18521-2	9	M.Lee, Kim	1/14	12/14	7/15	12/15
ARC Concepts and Reference Model Part 3: Real Character Representation	ISO/IEC 18521-3	9	Yoo, Kim	1/14	12/14	7/15	12/15

* Anticipated date of IS/Amd/TR publication

