Secretariat of ISO/IEC JTC 1/SC 24

"Computer graphics, image processing and environmental data representation"

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BUSINESS PLAN FOR JTC 1/SC24
COMPUTER GRAPHICS, IMAGE PROCESSING AND ENVIRONMENTAL DATA REPRESENTATION

PERIOD COVERED:

SUBMITTED BY:
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1.0 MANAGEMENT SUMMARY

1.1 CHAIRMAN’S REMARKS
This Business Plan was approved by SC 24 at the SC 24 Plenary held in Tokyo on 13 July 2007, and is pending approval from JTC 1 at the JTC 1 Plenary to be held in Australia in October 2007.

1.2 JTC 1 SC24 STATEMENT OF SCOPE
The current approved scope for JTC 1/SC 24 (Computer graphics, image processing and environmental data representation) is:

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

• computer graphics,
• image processing,
• virtual reality,
• environmental data representation and
• interaction with, and visual presentation of, information

Included are the following related areas: Modelling and simulation, 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 and hypermedia documents.

Excluded: Character and image coding; coding of multimedia and hypermedia document interchange formats, JTC 1 work in user system interfaces and document presentation; ISO TC 207 work on ISO14000 environment management, ISO TC211 work on geographic information and geomatics; and software environments as described by ISO/IEC JTC 1 SC22.

1.3 PROJECT REPORT

1.3.1 Programme of Work
The current JTC1/SC24 Programme of Work, when approved by JTC 1, will be found at http://isotc.iso.org/livelink/livelink/fetch/2000/2489/Ittf_Home/ITTF.htm

Pending JTC 1 approval, a brief summary of the SC24 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:

24.16.1.1 X3D architecture and base components Amendment 1 19775-1/Am 1
1.3.3 Work Items completed and now inactive:

<table>
<thead>
<tr>
<th>Work Item</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.1</td>
<td>Graphical Kernel System</td>
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<td>24.4</td>
<td>PHIGS Language Bindings</td>
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<td>24.6</td>
<td>Interface Techniques for Dialogues with Graphical Devices (CGI)</td>
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<td>Reference Model</td>
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<tr>
<td>24.10</td>
<td>Image Processing and Interchange (IPI)</td>
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<tr>
<td>24.11</td>
<td>Presentation Environment for Multimedia Objects (PREMO)</td>
</tr>
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</table>

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 SC24 work area. These include ISO TC 211, the Web3D Consortium, the World Wide Web Consortium (W3C), Open CGM Consortium and the SEDRIS Organization.

A number of Liaisons have been established with external organizations. The following subsections detail the areas of work most pertinent to SC 24.

1.4.1 Applicable to all SC 24

A Joint Task Force has been established by JTC-1/SC 24 and ISO/TC 211 Geographic information/Geomatics. Its purpose is to coordinate the work programmes of the two committees. The scope and terms of reference of the JTF are given in Appendices C and D respectively of SC 24 N 2783 (Minutes of the Ad-Hoc meeting of the TC-211 - SC-24 Joint Task Force, Montreal, September 2005).

1.4.2 WG 6: Computer Graphics

In co-operation with the Web3D Consortium, several eXtensible 3D (X3D), Humanoid Animation, and Virtual Reality Modeling Language (VRML) projects have been advanced as transposed standards. IS publication of an amendment to Part 1 of the 19775 X3D standard and amendments to two encodings were accomplished in the 2006-2007 programme year. An X3D binary encoding was progressed to FDIS text. A revision to 19775 was initiated and has progressed to FCD. Several other potential projects are anticipated for New Work Proposals over this annual cycle in alignment with the Web3D Consortium work plan.

1.4.3 WG 7: Image Processing
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 19115-Part 2 – Metadata for imagery and gridded data
- ISO 19118-Part 2 – Encoding rules for imagery and gridded data;
- ISO 19130 Geographic information – Imagery sensor models for geopositioning;

In co-operation with the North Atlantic Treaty Organization (NATO) Joint Intelligence, Surveillance and Reconnaissance (ISR) Capability Group (JISRCG), the Standardized ISR Library Interface (NSILI), Standardization Agreement (STANAG) 4559, has proven a successful archival, discovery and retrieval mechanism for imagery libraries. The library integrates ISO TC211 metadata and web-service standards for geographic information and geospatial imagery. ISO TC 211, NATO JISRCG and SC24 benefit by coordinating metadata and framework constructs for imagery and gridded data for the TC 211 technical specification projects, ISO 19115 multipart standard, ISO 19129 and ISO 19130. The JISRCG has moved towards comprehensive demonstration of its ISR standards. NITF and NSILI are at the centre of this work. As well as the NSIF Profile of BIIF providing value to NATO and its partners, the lessons learnt from these demonstrations will be fed back into the ISO fora of SC 24, SC 29 and TC 211. The NATO JISRCG 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. Therefore an ongoing relationship between SC24, TC211 and JISRCG serves to provide expert assistance and to assure the application of interoperable standards as a result of this three-way relationship.

SC 24/WG 7 continues to hold interest in the JTC 1/SC 37 Biometrics work programme. Based on the applicability of SC 24 standards in medical imaging, WG 7 continues to monitor the directions being taken for opportunities of cooperative work. WG 7 is interested to incorporate SC 37 requirements in the development of the ISO 19130 Imagery sensor models for geopositioning standard and anticipated extensions.

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.
- 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 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 (ISO/IEC 7498-1). SC 24/WG 7 places high value on the work of SC29, though collaborative efforts between SC 29 and SC 24 have recently been peripheral to the work of both.
subcommittees. SC 24 is working to commit more active liaison resources to our interests in SC 29 work.

SC 24/WG 7 is also interested in new work projects identified for IEC TC11 using satellite imagery for powerline management, planning and placement and other potential applications as described in SC 24 N2982 Imagery standards applicable to IEC TC11 Powerlines NWIP, wherein both SC 24 and SC 29 may have valuable contribution to the TC11 work.

1.4.4 WG 8: Environmental Representation

In co-operation with the SEDRIS Organization and in liaison with ISO TC 211, the International Hydrographic Office (IHO), and the Digital Geographic Information Working Group (DGIWG), the SEDRIS suite of standards have been developed and published. A liaison has also been attempted with the World Meteorological Organization (WMO), but to date, it has not been possible to identify a suitable contact person within the WMO. Communication with the WMO, however, will continue.

ISO/IEC 18023 parts 1, 2 and 3 address the representation and interchange of environmental data. ISO/IEC 18025: Environmental Data Coding Specification (EDCS) and ISO/IEC 18026: Spatial Reference Model (SRM) are used to provide unambiguous ways in which to specify environmental features, their locations and other position applications.

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

SC 24 liaison with the NATO Modelling and Simulation Group and with the Simulation Interoperability Standards Organization (SISO) supports the use of the SEDRIS standards by these organizations.

2.0 PERIOD REVIEW

In the Business year 2006 to 2007, the most notable achievements of JTC1 SC24 have been the publication of the series of standards based on SEDRIS technology, the publication of standards relating to X3D and the revision of the Registry standard ISO/IEC 9973.

2.1 MARKET REQUIREMENTS

The primary Information and Communication Technology (ICT) fields addressed by the standards developed in SC 24 are: 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 modelling 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; and “virtual” or 3-D environments that incorporate imagery, content concepts and interaction with virtual or synthetic environments applications in modelling and simulation.

There are several significant opportunities where SC 24 can play a major role in standards development. These are:

- 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 military, 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 reaching fruition. 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. Moreover, there is now widespread use of Google Earth to view Earth imagery, which is an instantiation of the BIIF standard. New work proposed by IEC TC 11 is a typical example of the potential market.

• 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. Work in this area includes collaboration with ISO TC 211 and participation in the development of its ISO 19130 Sensor model standard.

• Application of remote sensing in non-stationary platforms, such as Unmanned Aeronautical Vehicles (UAVs) and hand-held devices (e.g. mobile phones and digital cameras), 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 2-D and 3-D graphical interaction. Widespread commercial adoption of Humanoid Animation and X3D technologies is evident in both large and small companies. Our continuing work on VRML/X3D and PNG are examples where SC 24 has been successful.

• 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 four years SC 24 has progressed a number of Web3D initiatives including a VRML amendment, a new VRML part, X3D functional specifications, X3D encodings, X3D language bindings, and a Humanoid Animation specification.

• Continue to work in co-operation with the SEDRIS Organization and similar groups to bring what were once specialized technologies developed for military and government applications into widespread commercial use. The ISO/IEC committee continues as a partner in the work of the SEDRIS specifications.

2.2 ACHIEVEMENTS

In the period since June 2006, SC24 has published 10 International Standards, with 1 additional standard queued for publication.
Documents published:

24.15.1 Humanoid Animation (HAnim) 19774
24.17.1.1 X3D encodings XML Amendment 1 19776-1/Am1
24.18.1 X3D language bindings ECMAScript 19777-1
24.18.2 X3D language bindings Java 19777-2
24.13.1 SEDRIS Functional Specification 18023-1
24.13.2 SEDRIS transmittal format 18023-2
24.13.3 SEDRIS transmittal format – Binary Encoding 18023-3
24.13.5 Spatial Reference Model (SRM) 18026
24.14.3 SRM Language Bindings “C” 18042-4
24.19.2.1 Register of graphical items – revised standard 9973/Am 1

Documents approved for publication:

24.16.1 X3D architecture and base components Amend 1 19775-1/Am1

Documents approved for FDIS text:

24.14.4 EDCS Language Bindings “C” 18041-4 Ed2

Documents approved for progression to FDAM in the current planning year:

24.17.2.1 X3D encodings Classic VRML Amend1 19776-2/Am1

Documents progressed to FCD ballot:

24.17.3 X3D encodings Compressed binary 19776-3

Registration Actions:

- **EDCS Register Submission, 2006-Q3.** A submission of EDCS registration items was received in June 2006, reviewed, and balloted for approval (24N2906) in September 2006. Approval for registration, except for items with comments needing resolution, occurred in October 2006 (24N2909/24N2910).

- **SAMI Profile of CGM.** SC 24 reviewed an advanced draft for accuracy and compliance to the Model Profile of ISO/IEC 8632-1:1999. It is anticipated this profile will be submitted to JTC 1/SC 24 for registration ballot.

- **NSIF01.01 Profile of BIIF.** The draft NSIF01.01 profile has been provided to JTC 1/SC 24 in advance of the July 2007 Plenary, with the request that it be added to the JTC 1/SC 24 Working Group 7 agenda as a candidate Registered Item submission.

- **EDCS Register Submission, 2007-Q3.** A new EDCS submission was recently received, has passed initial verification for proper format and general content, and has been forwarded to the EDCS Rapporteur Group for technical review and evaluation.

Resolution of Past Unresolved Registration Actions:

- **EDCS Register Submission, 2006-Q3.** Those items without comment have been added to the EDCS database as registered items, while those with comments were added as "pending approval." The comments from Japan have been resolved and the comments from Australia are pending agreement. Based on the outcome of these resolutions, they will either be added as registered items or returned for revision and resubmission.
Approved Register Classes:
- Acknowledgment Type
- Annotation Style
- Application Structures
- Colour Model
- Compression Type
- Echo Type
- EDCS (set of classes)
- Edge Type
- Error
- Escape
- GDP
- GDP-3
- Generalized Structure Element
- Hatchstyle
- Interpolated Interior Style
- Line Caps
- Measure Format Identifier
- Modeling Clipping Operators
- Patterns
- Prompt & Echo
- Prompt Type
- Selection data type selector
- Set data type member
- SRM (set of classes)
- Textfont
- BIIF Profile
- CGM Profile
- EDCS Profile
- PIKS Profile
- 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, 3 registered profiles
- CGM Profile, 1 registered profile

EDCS classes, and number registered:
- EDCS attribute (EA) (31 registered items, 28 pending approval)
- EDCS attribute enumerant (EE) (26 registered items, 119 pending approval)
- EDCS classification (EC) (16 registered items, 35 pending approval)

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 SC24 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 consortium 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 advent of digital imagery has benefited the environment by reducing the natural resource expenditure on satellite photography and reproduction processes that required silver compounds applied to plastic film bases, chemical wash processing, etc. 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. Image-based browsers such as Google Earth and X3D Earth, for example, have brought the global environment into a large percentage of the homes around the world. As the ISO/IEC 12087-5 standard is appreciated for its ability to provide metadata-enriched imagery and remotely sensed data, it provides an opportunity to expand on network-enabled exchange of information, goods and services.

Resource consumption patterns are also reduced by the applications of SC 24 standards in the depiction, development, and sharing of virtual and simulated environments and integrated humanoid interactions. Modelled and simulated environments, using various SC 24 standards such as the suite of SEDRIS standards, 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 SC24 standards provides a positive means of aiding environmental solutions and reducing resource consumption.

2.5 PARTICIPATION METRICS
There are 12 members of SC 24, of which the following NBs actively participate;

- Australia
- Germany
- Korea
- Japan
- United Kingdom
- United States

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

3.0 FOCUS FOR NEXT WORK PERIOD
SC24 will focus on the progression of the following projects;

- Humanoid Animation standards (WG 6)
- X3D standards and amendments (WG 6)
- Templates for SEDRIS DRM (WG 8)
- Revision of ISO/IEC 18026 Spatial Reference Model and associated language binding (WG 8)
- New Work Item for the Revision of ISO/IEC 18025 Environmental Data Coding Specification (WG 8)
- Registration of items by WG 6, WG 7 and WG 8

3.1 DELIVERABLES
The following table contains the deliverables predicted for the period July 2007 to July 2008.

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Standard</th>
<th>Approximate publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDIS</td>
<td>19775-1 Revision X3D Architecture and base components</td>
<td>Jan 2008</td>
</tr>
<tr>
<td>FCD</td>
<td>19775-2 Revision X3D scene access interface</td>
<td>Nov 2007</td>
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<tr>
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<td>May 2008</td>
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<td>Oct 2007</td>
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<td>19776-1 Revision X3D encodings XML</td>
<td>Apr 2008</td>
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<tr>
<td>FDIS</td>
<td>19776-2 Revision X3D encodings Classic VRML</td>
<td>Feb 2008</td>
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<tr>
<td>FCD</td>
<td>19776-3 Revision X3D encodings Compressed binary</td>
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<td>FDIS</td>
<td>19776-3 Revision X3D encodings Compressed binary</td>
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<td>24788 Templates for the SEDRIS DRM</td>
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<td>Apr 2008</td>
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3.2 STRATEGIES

Our mission is to effectively apply our resources 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 we employ the following strategies:

- 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, not just "rubber stamp" efforts involving older technologies; and
- continue to seek ways to co-operate with other JTC 1 SCs and ISO TCs, especially SC 29 and SC 32.

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
SC 24 has developed a strong reliance on its Register of Items for the identification of implementation profiles and data coding profiles. The US NGA, as the Registration Authority (RA) to the SC24 Register of Items has notified SC 24 of its intentions to not extend its tenure as Registration Authority. The Registration Authority and SC 24 Secretary are researching the potential for the JTC 1 Livelink Standards as Databases to provide this service for SC 24. This provides a potential solution, but is not yet a confirmed solution for SC 24.

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, we lack an effective way to cancel or 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.

A third risk is of a lack of support for a co-operative development because a partner has a change of objectives and direction. We mitigate this risk 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 communications technologies.

3.2.2 OPPORTUNITIES
SC 24 is leveraging its work programme with government agencies to increase government investments into Standardized Commercial Off the Shelf 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 in support of data archival, discovery and retrieval
- Exploitation capabilities to apply to imagery and remotely sensed data.
- Application of standards for the representation, development, search, and sharing of integrated environmental data.
- Development of standards that help achieve interoperability amongst heterogeneous applications using environmental representations.
- Development of standards that promote the unambiguous, loss-less and non-proprietary interchange of environmental data.

New opportunities are also addressed in clause 2.1 (Market Requirements).

SC 24 has significant planned future work from these sources:

- 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 ISR Capability Group (JISRCG) for Intelligence, Surveillance and Reconnaissance (ISR);
Digital Geographic Information Working Group (DGIWG); US NITFS Technical Board (NTB) for US Military National Imagery

- Transmission Format Standards, based on the imagery file formats, metadata, and implementation of compression methodologies adopted from ISO/IEC JTC 1/SC 29, and other imagery formats are being evaluated for work within SC 24;
- Image processing for home, social life, and industry such as home security systems, intelligent robots, biometric systems, computer vision systems, and automated inspection systems
- Autonomous navigation systems for intelligent robots and unmanned vehicles
- 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 ISO/IEC 18025.
- The ISO Health Informatics Technical Committee 215, with which we have initiated a co-operative relationship;
- The Khronos Group, based on authoring and playback of dynamic media in WG 6, with which we have initiated a co-operative relationship;

Specific work will consist of;

In keeping with the JTC 1 objective to anticipate technology trends, SC24 follows developments from its co-operative agreements to build ISO standards from mature consortia recommendations.

- X3D (SC 24 transposition of Web3D Consortium specification in co-operative agreement): This work will be used extensively as the XML-compatible web-based 3D graphics capability that will augment the capabilities already provided by VRML. The WG 6 anticipates proposals to develop standards for augmenting X3D by standardizing facilities for defining the properties of materials, volume rendering, particle systems, interfacing with medical imagery, enhanced geospatial capabilities (based on WG 8 work), multi-user virtual environments, and an extension to provide motion capture capability for H-Anim characters, 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 SC 24. X3D is also highly configurable so that conformant profiles can be created that adapt readily to the requirements of particular data domains. Web3D has initiated new projects to revise ISO/IEC 19775 Parts 1 and 2, and ISO/IEC 19776 Parts 1, 2 and 3. Future amendments to X3D to incorporate the functionality described in the previous paragraph are expected.

- Humanoid Animation (SC 24 transposition of Web3D Consortium specification in co-operative 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 modelling, 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, and the migration of avatars between virtual environments.

- User Input (SC 24 transposition of Web3D Consortium specification in co-operative agreement): This work will define extensions to allow content creators access to more powerful gaming devices and other input devices inside their X3D worlds. Its products will feed into future amendments to X3D.

- Enhancing the ease of use and efficiency of employing the SEDRIS technologies. One such effort is the on-going project for the development of Templates for the SEDRIS DRM (TR 24788).

- Expanding the functionality of the Spatial Reference Model (ISO/IEC 18026) to address orientation, rotation, velocity, and acceleration; and to provide for similarity transformations.

- Enhancing the usability of the EDCS (ISO/IEC 18025) to include pictures in the dictionaries where they would ease the understanding of concepts.

- Authoring and playback of dynamic media: Interest has been expressed by the Khronos Group towards standardizing some of their specifications through SC24 in a manner similar to that used by the Web3D Consortium. The Khronos Group is an international organization of about sixty companies involved in developing embedded 3D systems. The initial specification that is being considered is OpenGL ES, which provides an embedded systems interface to OpenGL functionality at a low level suitable for implementation within semiconductors. Work is underway to initiate this effort.

- 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 JISRCG 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 the establishment of 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.

• 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. For example, this year SC 24 anticipates hundreds of proposals for the registration of new concepts in the EDCS (ISO/IEC 18025:2005)

• Adaptation of compression algorithms: SC 24 also works to leverage the wavelet compression capabilities standardized within JTC 1/SC 29.

3.3 WORK PROGRAMME PRIORITIES

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

Work programme priorities for SC 24 are those that support government policies and include:

• 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 in support of data archival, discovery and retrieval
• exploitation capabilities to apply to imagery and remotely sensed data.
• revisions to the X3D standards, ISO/IEC 19775 and 19776
• speedy implementation of enhancements and defect correction to the SRM, ISO/IEC 18026

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

Secretariat: BSI

2007-07-23

Total number of projects in status: Critical = 0 - Warning = 0 - Deleted = 0 - Without alert = 5

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