

New Work Item Proposal

26 March 2007

PROPOSAL FOR A NEW WORK ITEM

Date of presentation of proposal: 2007-03-26	Proposer: ISO/IEC JTC 1/SC 24
Secretariat: BSI	ISO/IEC JTC 1 N XXXX ISO/IEC JTC 1/SC 24 N 2933

A proposal for a new work item shall be submitted to the secretariat of ISO/IEC JTC 1/SC 24, with a copy to the ISO Central Secretariat.

Presentation of the proposal - to be completed by the proposer.

<p>Title</p> <p>Amendments to ISO/IEC 18026:2006(E), Spatial Reference Model, and affected standards.</p>
<p>Scope</p> <p>The primary new work to be addressed is an amendment to ISO/IEC 18026:2006(E), Spatial Reference Model (SRM). Because the ISO/IEC 18042-4:2006(E) (SRM LB) will be impacted by some of the proposed changes to the SRM, it, too, will need to be amended, where appropriate.</p> <p>The work to amend the SRM includes the following:</p> <ol style="list-style-type: none"> 1) In the definition of the seven-parameter transformation, specified in subclause 7.3.2, change the order of the axis rotations in equation (5) from x-axis first, followed by y-axis second, and z-axis last to the reverse order, z-axis first, y-axis second, and x-axis last. 2) In the specification of an object binding rules set (OBRS), add "Figures" as a specification element, and incorporate the existing figures of the nine object binding rules set (OBRS) into the modified tables. This includes tables: 7.19 equatorial inertial; 7.21, solar ecliptic; 7.23, solar equatorial; 7.25, heliocentric Aries ecliptic; 7.27, heliocentric planet ecliptic; 7.29, heliocentric planet equatorial; 7.31, celestiomagnetic; 7.33, solar magnetic ecliptic; and 7.35, solar magnetic dipole. Also modify subclause 13.3.7 and Annex H.8 accordingly. These changes will permit a figure to be included in any OBRS that may be registered. 3) Editorial improvements in wording, figures, and formatting. Several examples that could be improved have been identified. 4) Improved registration forms and procedures to support the registry process. A paragraph needs to be added to subclause 13.2.5 to allow for the registration of normative and non-normative references. Further, it is anticipated that as the registry is implemented more improvements may be identified. 5) Refine the accuracy domain specifications of the Default Profile Specification (Table 12.2) to account for the loss of precision in the digital representation of numbers of extremely large magnitude.. 6) Improvements to the RT region elements for Object-fixed ERM RT specifications (Table E.6) by using, and referencing values from, the US National Geospatial-Intelligence Agency (US NGA) GEO-TRANS (Geographic Translator) documentation. 7) Improvements by providing Matrix_3x3 and Matrix_4x4 support corresponding to operations in subclause 10.4.6. A 3x3 matrix is used to specify nine-elements containing scaling and rotation data as part of an SRF transformation. A 4x4 matrix is commonly used in the computer graphics community to scale, orient, and translate the position of an object.

Note: ISO/IEC JTC 1/SC 24 N2898 (ISO/IEC 18026) Defect Report 1 addressed both technical and editorial issues. The technical defects are addressed in ISO/IEC JTC 1/SC 24 N 2923, SRM Draft Technical Corrigendum 1. Because of the volume of editorial defects, the project editor deferred those items to be addressed at the time of an amendment. These are to be incorporated with this amendment.

ISO/IEC 18042-4:2006(E) SRM Language Bindings: Part 4: C Amendment #1 is to make any changes necessitated by those made in the amendment to ISO/IEC 18026:2006(E), Spatial Reference Model (SRM).

Other improvements to the above standards that may be identified by JTC1/SC24/WG8 during the development of this work item.

Purpose and justification

1) The seven-parameter transformation definition:

The definition of the seven-parameter transformation involves axis rotations. When specifying the parameter values of the seven-parameter transformation associated with a Reference transformation (RT), the ISO/IEC 18026:2006(E) definition unintentionally complicates the computations needed to support non-Greenwich prime meridians when other axis rotations in an RT are non-zero. The proposed amendment (applied to subclause 7.3.2) will simplify the computations required to specify the RT parameters of any non-Greenwich prime meridian ERM RT that may be registered. The RT parameters of non-Greenwich prime meridian ERM RTs that are now specified in ISO/IEC 18026:2006(E) will not be effected by this change, because they all have zero x- and y-axis rotations. The small angle approximation of the seven-parameter transformation defined in B.6 (non-normative) is also unaffected.

2) Object binding rule set Figures:

Figures accompany object binding rule set (OBRS) specifications in the text of each specification subclause. There is no mechanism in of ISO/IEC 18026:2006(E) to provide such figures for a registered OBRS. Adding a Figure specification element would provide that mechanism as is the case for specifications of Abstract Coordinate Systems in Clause 5 of ISO/IEC 18026:2006(E).

3) Editorial improvements:

There are editorial improvements needed in ISO/IEC 18026:2006(E) to make the intent of the existing text and figures more clear as well as formatting consistency. These improvements do not change the technical intent of the standard, and many of these were identified prior to the publication of the ISO/IEC 18026. However, due to timing of the publication process, these could not be included in the published standard, and were deferred for inclusion with the amendment to the standard.

4) Registration:

There is a need to be able to register new normative and non-normative bibliographic references as new functionality is registered. This provision was overlooked in the original drafting of the document. Other modifications to the Registration clause are required to support the Registry process under development.

5) Default profile specification:

There is a need to take into account the loss of precision due to extremely large coordinate magnitudes. Limitations on the applicable accuracy domains are needed to avoid exceedingly large coordinate magnitudes that make functional compliance difficult for implementations employing double precision arithmetic.

6) RT region elements:

GEOTRANS is a product of the US NGA that converts geographic coordinates among a wide variety of coordinate systems, map projections, and datums. Accompanying the software application itself is documentation containing tables with values to be used for conversions. While values from GEOTRANS were used in the RT region elements of the object-fixed ERM specifications (Table E.6), there was no attribution to their derivation. In addition, a few of the values transcribed have since been found to be in error, and have been updated in the GEOTRANS documentation. Therefore, making these improvements will make the values used in the RT region elements of the object-fixed ERM specifications (Table E.6) more accurate and they will be properly attributed to GEOTRANS.

7) Matrix_3x3 and Matrix_4x4:

The application program interface (API) specified in clause 11 provides support for the reorienting of directions and arrays of directions as required when changing between SRFs, but there is no API support for the matrix operation described in clause 10.4.6. This type of operation is common in 3D computer graphics applications and is commonly combined with positional translation and represented as a 4x4 matrix. The support for these matrix operations will be added.

Programme of work

If the proposed new work item is approved, which of the following document(s) is (are) expected to be developed?

a single International Standard

more than one International Standard (expected number:)

a multi-part International Standard consisting of parts

an amendment or amendments to the following International Standard(s): ISO/IEC 18026:2006(E); and ISO/IEC 18042-4:2006 (E), SRM Language Bindings: Part 4: C

a technical report , type

And which standard development track is recommended for the approved new work item?

a. Default Timeframe

b. Accelerated Timeframe

c. Extended Timeframe

Relevant documents to be considered

ISO 19111 Geographic information — Spatial referencing by coordinates.

Co-operation and liaison

ISO TC 211 and The SEDRIS Organization

Preparatory work offered with target date(s)

SC 24 is prepared to undertake the preparatory work required for this new work item. This project begins at level 3 for all the standards to be amended. The schedule for the SRM amendment is as follows:

PDAM ballot FPDAM ballot FDAM ballot Amendment publication

March 2007 August 2007 January 2008 May 2008

The SRM PDAM (ISO/IEC JTC 1/SC 24 N2934) is available to help NBs understand the proposed changes more clearly and to expedite the balloting process. All improvements described herein are included, with the exception of item 7) Matrix_3x3 and Matrix_4x4 support, which will be completed later.

Signature:

Will the service of a maintenance agency or registration authority be requiredYes.....

- If yes, have you identified a potential candidate?Yes.....
- If yes, indicate name ..Registry of Graphical Items ISO/IEC 9973...

Are there any known requirements for coding?No.....

- If yes, please specify on a separate page

Does the proposed standard concern known patented items?No.....

- If yes, please provide full information in an annex

Are there any known accessibility requirements and/or dependencies?....No.....

- If yes, please specify on a separate page.

Are there any known requirements for cultural and linguistic adaptability?.....No...

- If yes, please specify on a separate page.

Comments and recommendations of the JTC 1 or SC 24 Secretariat - attach a separate page as an annex, if necessary

Comments with respect to the proposal in general, and recommendations thereon:
 It is proposed to assign this new item to JTC 1/SC 24

Voting on the proposal - Each P-member of the ISO/IEC joint technical committee has an obligation to vote within the time limits laid down (normally three months after the date of circulation).

Date of circulation:	Closing date for voting:	Signature of Secretary:
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NEW WORK ITEM PROPOSAL - PROJECT ACCEPTANCE CRITERIA		
Criterion	Validity	Explanation

A. Business Requirement		
A.1 Market Requirement	Essential <input checked="" type="checkbox"/> Desirable <input type="checkbox"/> Supportive <input type="checkbox"/>	The implementations of the SRM are an essential component of several IT applications currently in use. The proposed amendment items are essential to the successful operation of those applications.
A.2 Regulatory Context	Essential <input type="checkbox"/> Desirable <input type="checkbox"/> Supportive <input type="checkbox"/> Not Relevant <input checked="" type="checkbox"/>	
B. Related Work		
B.1 Completion/Maintenance of current standards	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	ISO/IEC 18026:2006(E) ISO/IEC 18042-4:2006(E)
B.2 Commitment to other organisation	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	The SEDRIS Organization
B.3 Other Source of standards	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
C. Technical Status		

C.1 Mature Technology	Yes <input checked="" type="checkbox"/> ___ No ___	The technology is mature. Failing to include these proposed amended items in the original standard was an oversight.
C.2 Prospective Technology	Yes ___ No <input checked="" type="checkbox"/> ___	
C.3 Models/Tools	Yes ___ No <input checked="" type="checkbox"/> ___	
D. Conformity Assessment and Interoperability		
D.1 Conformity Assessment	Yes ___ No <input checked="" type="checkbox"/> ___	
D.2 Interoperability	Yes ___ No <input checked="" type="checkbox"/> ___	
E. Adaptability to Culture, Language, Human Functioning and Context of Use		
E.1. Cultural and Linguistic Adaptability	Yes ___ No <input checked="" type="checkbox"/> ___	
E.2. Adaptability to Human Functioning and Context of Use	Yes ___ No <input checked="" type="checkbox"/> ___	
F. Other Justification		