ISO/IEC JTC1/SC24 **N 3266**

Our ref.: DIH

Date: 2011-08-05

Secretariat of ISO/IEC JTC 1/SC 24

Computer graphics, image processing and environmental data representation"

Title:	Result of ballot N 3250 CD 18026 rev (Edn 3)
Source:	ISO/IEC JTC1/SC24 Secretariat
Replaces:	--
Document Type:	Summary of voting/Table of Replies
Projects:	Revision of 18026 'Information technology -- Spatial Reference Model (SRM)'
Status:	FYI
. Action ID:	Approved for DIS ballot after WG8 has addressed the comments submitted at the CD ballot and prepared an updated DIS draft
Due Date:	--
Distribution:	P, O, L, Members Secretariat JTC 1, ITTF, SC 24 Chairman and WG Convenors
Date of Distribution:	2011-08-05
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Result of voting

Ballot Information	
Ballot reference	ISO/IEC CD 18026
Ballot type	CD
Ballot title	Information technology -- Spatial Reference Model (SRM)
Opening date	2011-06-03
Closing date	2011-08-03
Note	

Member responses:	
Votes cast (9)	China (SAC) Egypt (EOS) France (AFNOR) Japan (JISC) Korea, Republic of (KATS) Portugal (IPQ) Russian Federation (GOST R) United Kingdom (BSI) USA (ANSI)
Comments submitted (1)	ISO/TC 211
Votes not cast (1)	Germany (DIN)

Questions:	
Q.1	"Do you agree with approval of the CD text?"
Q.2	"If you approve the CD text with comments, would you please indicate which type ? (General, Technical or Editorial)"
Q.3	"If you disappove the draft, would you please indicate if you accept to change your vote to Approval if the reasons and appropriate changes will be accepted?"

Votes by members	Q.1	Q.2	Q.3
China (SAC)	Approval as presented	Ignore	Ignore
Egypt (EOS)	Approval as presented	Ignore	Ignore
France (AFNOR)	Abstention	Ignore	Ignore
Japan (JISC)	Disapproval of the draft	All	Yes
Korea, Republic of (KATS)	Approval as presented	Ignore	Ignore
Portugal (IPQ)	Abstention	Ignore	Ignore

Russian Federation (GOST R)	Approval as presented	Ignore	Ignore
United Kingdom (BSI)	Approval as presented	Ignore	Ignore
USA (ANSI)	Approval as presented	Ignore	Ignore

Answers to Q.1: "Do you agree with approval of the CD text?"		
6 x	**Approval as presented**	**China (SAC) Egypt (EOS) Korea, Republic of (KATS) Russian Federation (GOST R) United Kingdom (BSI) USA (ANSI)**
0 x	**Approval with comments**	
1 x	**Disapproval of the draft**	**Japan (JISC)**
2 x	**Abstention**	**France (AFNOR) Portugal (IPQ)**

Answers to Q.2: "If you approve the CD text with comments, would you please indicate which type ? (General, Technical or Editorial)"		
0 x	**General**	
0 x	**Technical**	
0 x	**Editorial**	
1 x	**All**	**Japan (JISC)**
8 x	**Ignore**	**China (SAC) Egypt (EOS) France (AFNOR) Korea, Republic of (KATS) Portugal (IPQ) Russian Federation (GOST R) United Kingdom (BSI) USA (ANSI)**

Answers to Q.3: "If you disappove the draft, would you please indicate if you accept to change your vote to Approval if the reasons and appropriate changes will be accepted?"		
1 x	**Yes**	**Japan (JISC)**
0 x	**No**	
8 x	**Ignore**	**China (SAC) Egypt (EOS) France (AFNOR) Korea, Republic of (KATS) Portugal (IPQ) Russian Federation (GOST R) United Kingdom (BSI) USA (ANSI)**

Comments from Voters		
Member:	Comment:	Date:
Japan (JISC)	***Comment File***	2011-08-02 05:57:10
CommentFiles/ISO_IEC_CD_18026_JISC.doc		

Comments from Commenters		
Member:	Comment:	Date:
ISO/TC 211	***Comment File***	2011-08-02 13:25:40
CommentFiles/ISO_IEC_CD_18026_ISO_TC 211.doc		

Japan comments on SC24 N 3250, CD 18026-2012 (SRM)

2011-08-03, edited by Koreaki Fujimura

The national body of Japan disapproves SC24 N 3250, CD 18026 (SRM) for reasons as below. Resolution of these issues and appropriate changes in the text will change our vote to approval.

Japan_001:

Problem: One of the significant changes from the 2nd edition, described in NWIP-5 in the Committee Draft Cover Letter, that

> As temporal coordinate system concepts are treated in other standards, a Temporal CS is no longer a registerable item.

should be reconsidered as follows:

1) The rationale, underlined above, is not consistent with the text in 4.6.2 where the concepts of time from the viewpoint of SRM are described. The rationale should be discarded and the related actions should be reconsidered.

2) If the rationale that those concepts come from other standards, they should be explicitly explained in 4.6.2.

3) Even if the rationale is valid, some Temporal CS may need to be registered in the same way as many spatial CS defined in other standards or documents have been registered in order to be usable in the SRM context.

Action: The text in 6.4 of the second edition should be revived, or it should be declared as the future work of this standard.

Japan_002:

Problem: The second paragraph in 4.6.2.1

> This International Standard uses the concept of time in several ways. Dynamic spatial reference frames (see 4.7) and dynamic object reference models (see 4.5) are treated as having a time coordinate value as a specifying parameter. These cases then reduce to the corresponding static cases by fixing a value for the time parameter.

will put readers into confusion because it suggest that "dynamic spatial reference frames" are desribed in 4.7 and "dynamic object reference models" are described in 4.5 but there are no such descriptions in 4.5 and 4.7.

Action: The paragraph should be removed and some excuse for the absense of "dynamic spatial reference frames" and "dynamic object reference models" in this edition should be given later in 4.6.2.1. It may be declared as "future work".

Japan_003:

Problem: Page 110, the fifth line from the bottom (6.4.5.2) -- the introduction of "norm" of quaternion as the square of "modulus" will put many readers into confusion because some other documents define "norm of a quaternion" in the same way as "modulus" here and "norm" for many

other mathematical objects are defined in "square root" way.

Action: This line should be removed. The term "norm" is not used except here.

Japan_004:

Problem: Page 111, the eighth line from the bottom (6.4.5.3) -- the superscript "2" attached to the modulus |p| seems unnecessary.

Template for comments and secretariat observations

Date: 2011-08-02	Document: ISO/IEC CD 18026

1	2	(3)	4	5	(6)	(7)
MB[1]	**Clause No./ Subclause No./ Annex** (e.g. 3.1)	**Paragraph/ Figure/Table/ Note** (e.g. Table 1)	**Type of com-ment**[2]	**Comment (justification for change) by the MB**	**Proposed change by the MB**	**Secretariat observations** on each comment submitted
ISO/ TC 211	Clause 7.1	Paragraph 3	te	"Object reference models that use the same set of reference datum primitives and similar binding constraints are abstracted in the notion of an object reference model template." In some cases which need two or even more ORMTs to complete one STT. For example, one use case needs two ORMTs ,one ORMT is used for the transformation from WGS84 to an local datum, another ORMT is used for map projection transformation.	Change as, "Object reference models that use the same set of reference datum primitives and similar binding constraints are abstracted in the notion of one or more object reference model templates."	
ISO/ TC 211	Clause 7.3.3	Paragraph 2	te	Consider for the movement, the better to add t(time)with x,y or x,y,z coordinate.	change as, (x, y, z, t)S , (x, y, z, t)T	
ISO/ TC 211		Table 7.11	te	Definition of STT parameters, they are not only the symbols, descriptions and units, but also the digital values.	Definition of STT parameters, should change as, Parameters and units of measure(or unitless), parameter symbols in a specified order or description.	

1 **MB** = Member body (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by **)

2 **Type of comment:** **ge** = general **te** = technical **ed** = editorial

NOTE Columns 1, 2, 4, 5 are compulsory.

SEDRIS Organization Comments
on
Spatial Reference Model (SRM)
ISO/IEC 18026:2009 CD (Revision to Edition 2)
1 August 2011

General Comments

Throughout

SEDRIS_G001:
Editors should determine whether there are additional terms, definitions, symbols, abbreviations, notations and/or conventions used across the document that should be included in Clause 3. For example, units are discussed in 4.12.

Rationale: Consistency in the use of terms, and having one place in the document that discusses conventions.

SEDRIS_G002:
Editors ensure that the terminology used throughout is consistent within and across clauses. For example, the terms position, location and point should not be used interchangeably. Position should be reserved for "position-space", location for "object-space", and for point the context determines its use. Similarly, the use of the terms spatial coordinate system, abstract coordinate system, coordinate system, and spatial reference frame need to be reviewed.

Rationale: Clarity and consistency in use of terms.

Clause 6: Orientation

SEDRIS_G003:
There are numerous subtle but important consistency issues that appear in Clause 6. These include possible inconsistencies in the use of conventions such as to-from operations, PVR/CFR conventions, order of rotations, body/space-fixed conventions, and other similar terminology or symbols that can be inadvertently misrepresented. Editors need to review Clause 6 and ensure there is a coherent and consistent treatment of the concepts throughout Clause 6. Similar issues may need to be examined with respect to similarity transformations to ensure consistency between orientation/rotation concepts discussed in Clause 6 and STT-related concepts discussed in other parts of the Standard. Subsequent to such corrections in Clause 6, editors need to ensure the operations for these concepts in Clause 10 remain consistent with the updates.

Rationale: Consistency in treatment of concepts, notations and conventions.

Clause 10: SRF operations

SEDRIS_G004:
Editors should revisit Clause 10 after any updates or corrections are done to ensure consistencies in Clauses 4 – 9, and update Clause 10 accordingly.

Rationale: Consistency of technical content throughout the document.

Editorial Comments

Table of contents

SEDRIS_E001: Table of contents
Remove extra space for Tables 7.24, 8.31, and 11.47 - 11.50.

Rationale: Unnecessary spaces.

SEDRIS_E002: Table of contents
Add an extra space in front of the wrapped part of Table E.14's title to line up with the line above.

Rationale: Missing space.

Clause 3: Terms, definitions, symbols, and abbreviated terms

SEDRIS_E003: 3, title
In the Clause 3 title, and its listing in the Table of Contents, change "abbreviated terms" to read "abbreviations".

Rationale: Consistency with the paragraph following Table 3.2.

SEDRIS_E004: 3.2, title
In the 3.2 title, and its listing in the Table of Contents, change "abbreviated terms" to read "abbreviations".

Rationale: Consistency with the paragraph following Table 3.2.

SEDRIS_E005: 3.2, Table 3.3
Change the table heading row from "Abbreviated term" to read "Word or phrase".

Rationale: Consistency with the paragraph following Table 3.2.

SEDRIS_E006: 3.2, Table 3.3 and F.2, Table F.1
Change the definition of the SIRGAS entries to read "Sistema de Referencia Geocéntrico para las Américas (The Americas)".

Rationale: The name has changed since the last SRM edition.

Clause 4: Concepts

SEDRIS_E007: 4.12, 1st paragraph, 1st sentence
Change "(see [ISO80000-3])" to read "(see ISO 80000-3)".

Rationale: Consistency in style.

SEDRIS_E008: 4.12, 2nd paragraph, 2nd sentence
Change "ISO 31-1 (see [ISO80000-3])" to read "ISO 80000-3".

Rationale: Consistency in style.

SEDRIS_E009: 4.12, 2nd paragraph, last sentence
Change "ISO/IEC 18025 (see [I18025])" to read "ISO/IEC 18025".

Rationale: Consistency in style.

Clause 5: Abstract coordinate systems

SEDRIS_E010: sentence following 5.5.3 b), Footnote 11
Change 'the term "prime meridian" as the meridian from which the longitudes of other meridians are quantified.' to read 'the term prime meridian as "the meridian from which the longitudes of other meridians are quantified".'

Rationale: Modify placement/use of quotes to emphasize the definition rather than the term.

SEDRIS_E011: 5.6.3, 3rd paragraph, Footnote 13
Change 'defines "Cartesian coordinate system" as a coordinate system that gives the position of points relative to *n* mutually-perpendicular axes.' to read 'defines Cartesian coordinate system as "a coordinate system that gives the position of points relative to *n* mutually-perpendicular axes".'

Rationale: Modify placement/use of quotes to emphasize the definition rather than the term.

Clause 7: Reference datums, embeddings, and object reference models

SEDRIS_E012: 7.4.5, Table 7.34, Element STT parameters, NOTE
Correct the mixed font sizes in the Note, so the entire Note is in 9-pt font.

Rationale: Consistency with ISO Directives, Part 2.

Clause 8: Spatial reference frames

SEDRIS_E013: 8.7.1, 4th paragraph, 3rd sentence
Change "standardised" to read "standardized".

Rationale: Misspelled.

SEDRIS_E014: 8.7.3, Table 8.51, References element
Change "[I18025, Table 6.11, GTRS_GEOTILE]" to read "ISO/IEC 18025, Table 6.11, GTRS_GEOTILE".

Rationale: Consistency in style.

Clause 10: SRF operations

SEDRIS_E015: 10.5.5, Example 2
Change "ISO/IEC 18023-1 (see I18023-1)" to read "ISO/IEC 18023-1".

Rationale: Consistency in style.

Clause 12: Profiles

SEDRIS_E016: 12.2, 4th paragraph, last sentence
Change "IEC 60559 (see [IEC 60559])" to read "IEC 60559".

Rationale: Consistency in style.

Clause 13: Registration

SEDRIS_E017: 13.1, 4th paragraph, 3rd sentence
Change "ISO/IEC 9973 (see [ISO/IEC 9973])" to read "ISO/IEC 9973".

Rationale: Consistency in style.

SEDRIS_E018: 13.2.5.1, 2nd and 5th sentences
Change "[ISOD2]" to read "(see ISO/IEC Directives, Part 2)".

Rationale: Consistency in style.

SEDRIS_E019: 13.2.5.2, 4th sentence
Change "[ISOD2]" to read "ISO/IEC Directives, Part 2".

Rationale: Consistency in style.

SEDRIS_E020: 13.3.1 d)
Change "and constraints on" to read "and the constraints on".

Rationale: Correct grammar.

SEDRIS_E021: 13.3.2 Example 1, 1)
Insert a space after the bullet number.

Rationale: Missing space.

SEDRIS_E022: 13.3.2, Example 3
Change "transformation widely used" to read "transformation is widely used".

Rationale: Grammar, missing verb.

SEDRIS_E023: 13.3.3, d) 1)
Change “a error” to read “an error”.

Rationale: Grammar.

SEDRIS_E024: 13.3.6 a) 4)
Change “axis rotations angles” to read “axis rotation angles”.

Rationale: Grammar.

SEDRIS_E025: 13.3.9, a)
Insert a comma before “and”.

Rationale: Clarity.

SEDRIS_E026: 13.3.10, a)
Insert a comma before “and”.

Rationale: Clarity.

Annex B: Implementation notes

SEDRIS_E027: B.2.3, NOTE
Change “[IEC 60559]” to read “(see IEC 60559)”.

Rationale: Consistency in style.

SEDRIS_E028: B.4.2, g)
Change “(see also [IEC 60559])” to read “(see also IEC 60559)”.

Rationale: Consistency in style.

Annex G: Change and deprecation plan

SEDRIS_E029: G.1, last paragraph, last sentence
Change “ISO/IEC 9973 (see [ISO/IEC 9973])” to read “ISO/IEC 9973”.

Rationale: Consistency in style.

Annex I: Conformance testing for SRF operations

SEDRIS_E030: I.5, 2nd paragraph, 1st sentence
Change “IEC 60559 (see [IEC 60559])” to read “IEC 60559”.

Rationale: Consistency in style.

SEDRIS_E031: I.5, 2nd paragraph, 2nd sentence
Change "(see [IEC 60559])" to read "(see IEC 60559)".

Rationale: Consistency in style.

Bibliography

SEDRIS_E032: Bibliography, 1st paragraph
Add the Note below, following the 1st paragraph.

> "NOTE Because citations to International Standards are made by giving the number of the standard followed by the year (if applicable) and any other specific information identifying the portion of the standard cited, identifiers are not needed for this purpose. Therefore the identifier field is grey when a reference is an International Standard."

Rationale: Consistency in style.

SEDRIS_E033: Bibliography, I18023-1, I18025, I19111 and ISOD2 entries
Remove these identifiers from the Identifier fields/cells, grey out the fields/cells, and move the citations (and their bookmarks) to the very top of the Bibliography table.

Rationale: Consistency in style (see above Bibliography, 1st paragraph comment).

SEDRIS_E034: Bibliography, I19111 entry
Change "ISO 19111:2003" to read "ISO 19111:2007". (Note that the hyperlink has also changed.)

Rationale: Update to current edition.

SEDRIS_E035: Bibliography, ISOD2 entry
Change "5th ed. 2004" to read "6th ed. 2011".

Rationale: Update to current edition.

Technical Comments

Introduction

SEDRIS_T001: 0.1, 1st paragraph
Change the 2nd - 4th sentences to read "Information is sometimes spatially referenced to local structures (Example: interior walls and doorways within a building) or local regions (Example: streets and buildings within a city), or to the Earth as a whole (Example: global weather). Information is sometimes spatially referenced to other celestial bodies (Examples: astronomical, orbital, and geomagnetic observations). Information is also sometimes spatially referenced to objects defined within contexts such as virtual realities (Example: 3D models)."

Rationale: Improved Examples in second sentence, and avoid the use of "might".

SEDRIS_T002: 0.1, 2nd paragraph
Change the 3rd sentence to read "Spatial reference frames are sometimes specified relative to moving objects (Examples: planets and spacecraft), and therefore provide spatial values that are a function of time.

Rationale: Avoid the use of "might", and provide clarity.

Clause 1: Scope

SEDRIS_T003: 1, penultimate paragraph, 1st sentence
Change 1st sentence to read "The SRM specifies an application program interface (API) that supports the representations, conversion, and transformation of position and orientation information in a variety of forms.".

Rationale: State what the API is, before discussing.

SEDRIS_T004: 1, penultimate paragraph, 2nd sentence
Remove the phrase "with functionality defined to ensure high precision transformation".

Rationale: API does not specify precision.

Clause 2: Normative references

SEDRIS_T005: 2, Table
Change the reference for IEC 60559 to its 2011 version, when it is published later this year.

Rationale: Updated version of the reference available.

Clause 3: Terms, definitions, symbols, and abbreviated terms

SEDRIS_T006: 3.1.1, NOTE
Change the Note to read "Gravity includes rotational effects; however, such rotational effects are not included in this model.".

Rationale: Clarity.

SEDRIS_T007: 3.1.3
Change "normal" to read "perpendicular".

Rationale: Clarity.

SEDRIS_T008: 3.1.5
Add a NOTE 3, which reads "The north side of the invariable plane of the solar system is the side facing in the direction of Polaris.".

Rationale: Clarifying the term "north" in the definition of "north pole".

SEDRIS_T009: 3.1.7
Change to read "mathematical function that re-expresses coordinates, directions, and/or orientations expressed in one spatial reference frame in terms of a different spatial reference frame; or mathematical function for distance or other geometric quantities within a single spatial reference frame".

Rationale: Distance is not an operation between two SRFs.

SEDRIS_T010: 3.2, new 1st paragraph
Add a new 1st paragraph as follows: "In this International Standard, dates that are included in an element of a concept instance specification shall conform to the notation and formats of ISO 8601."

Rationale: ISO 8601 is cited as a normative reference and dates are used in some specification elements. This sentence connects the citation to its use in the standard.

SEDRIS_T011: 3.2, old 1st paragraph
Change "the mathematical notation conventions used" to read "mathematical notation conventions commonly used".

Rationale: Clarity of scope.

SEDRIS_T012: 3.2, paragraph before Table 3.2
Change "the symbols used in" to read "symbols commonly used in".

Rationale: Clarity of scope.

SEDRIS_T013: 3.2, Table 3.2
Change the last entry of Table 3.2 to "orientation of target SRF with respect to source SRF in the position vector rotation convention".

Rationale: Clarity.

SEDRIS_T014: 3.2, Table 3.3
Delete the entry for "SRFS – Spatial Reference Frame Set", and throughout the standard replace "SRFS" with "SRF set" (as in comments below).

Rationale: Easily confused with plural SRFs and source SRF_S.

Clause 4: Concepts

SEDRIS_T015: 4.1, 1st list item a)
Move the 3rd sentence to a new list item h), and renumber the old list item h) as list item i). Replace the remaining sentences in list item a) with "Spatial locations are identified by positions in a spatial coordinate system. The collection of spatial locations associated with a spatial object of interest, such as the Earth, is called its object-space (see 4.2). A spatial coordinate system is specified by a spatial reference frame.".

Rationale: Orientation concept should not be mixed with position/location concept. And clarification of terminology in list item a).

SEDRIS_T016: 4.14, 1st paragraph
Change to read: "This International Standard specifies standardized instances of SRM concepts. This International Standard allows new instances of SRM concepts identified in the list below to be specified by registration (see Clause 13). These new instances are termed registered items. Registered items may be accessed at the International Register of Items.".

Rationale: Confusing use of "several" and "some" removed. Definition of "registered items", instead of forward referencing to clause 13, moved here.

SEDRIS_T017: 4.14, EXAMPLE
Delete the example.

Rationale: Example does not provide any additional or clarifying information for the concepts in the text. Examples are given in Clause 13.

SEDRIS_T018: 4.14, 3rd paragraph
Add as a new 3rd paragraph: "In addition, references for new instances of the above SRM concepts may be registered (see 13.2.5).".

Rationale: Allowed in 13.2.5, but not mentioned here.

SEDRIS_T019: 4.14, new 4th paragraph, 5th sentence
Delete the 5th sentence (beginning: "The specification of …").

Rationale: Unnecessary verbiage.

SEDRIS_T020: 4.14, new 5th paragraph, 1st sentence
Change "… item (see …" to read "… item except as allowed by ISO/IEC 9973 (see …".

Rationale: Consistency with previous paragraph: "... according to the procedures in ISO/IEC 9973."

Clause 5: Abstract coordinate systems

SEDRIS_T021: 5.4, Table 5.1, Footnote 9
Change the footnote to read: 'The ISO 19111 concept of a linear coordinate system, defined as "a one-dimensional coordinate system in which a linear feature forms the axis", is similar in some respects to the curve CS and plane curve CS concepts. This ISO 19111 concept is distinct from the linearity property of abstract coordinate systems (see 5.6.1).'

Rationale: Modify wording to match current edition of ISO 19111.

SEDRIS_T022: 5.5.3 b), Footnote 10
Change 'the term "meridian" as the intersection between an ellipsoid and a plane containing the semi-minor axis of the ellipsoid' to read 'the term meridian as "the intersection between an ellipsoid and a plane containing the shortest axis of the ellipsoid".'

Rationale: Modify wording to match current edition of ISO 19111.

Clause 6: Orientation

SEDRIS_T023: 6.1, 2nd paragraph, last sentence
Change to read "Only a single rotation is required for such a specification, since, as a consequence of Euler's rotation theorem, a given series of rotations about various axes is equivalent to a single rotation."

Rationale: Adds the phrase "about various axes" to improve clarity.

SEDRIS_T024: 6.2, 4th paragraph, 1st sentence
Change to read "Rotation operations (in a given rotation convention) and orientation specifications are closely related, but the relationship is not one-to-one."

Rationale: Reworded to improve clarity.

SEDRIS_T025: 6.4.1, 1st paragraph, last sentence
Change the hyperlink to read "6.4.4".

Rationale: Hyperlink target made more accurate.

SEDRIS_T026: 6.4.1, 2nd paragraph, 1st sentence
Change to read "Other less compact specifications using four or more scalar parameters together with constraint rules are commonly used because they are more amenable to some computations, such as performing a rotation operation on a point, composing rotations, interpolating rotations, and other operations, and/or because these parameters can be measured or modelled directly."

Rationale: Reworded and commas added to improve clarity.

SEDRIS_T027: 6.4.1, 2nd paragraph, last sentence
Change to read "All rotation representations defined in the remainder of this clause tacitly require an orthonormal basis for the coordinate representation of vectors."

Rationale: Reworded to improve clarity.

SEDRIS_T028: 6.4.2, 3rd paragraph, last sentence
Change to read "The transformation is then a rotation of positive angle θ about the rotation axis spanned by the vector $\boldsymbol{n}$ (the points that lie on the rotation axis are fixed points under the transformation)."

Rationale: Reworded to improve clarity.

SEDRIS_T029: 6.4.2, 11th paragraph (paragraph before NOTE 1), 1st sentence
Change to read "The matrix $\boldsymbol{M}$ operates on points in 3D Euclidean space by either right or left matrix multiplication of vectors."

Rationale: Reworded to improve clarity.

SEDRIS_T030: 6.4.2, 12th paragraph, 2nd & 3rd sentences
Combine to read "If $\boldsymbol{r}$ is a point in 3D Euclidean space and $\boldsymbol{E}$ denotes that vector space with orthonormal basis x, y, z, and $\boldsymbol{E}'$ denotes the same vector space with orthonormal basis x', y', z', the coordinate representation of $\boldsymbol{r}$ with respect to each basis is:"

Rationale: Combined to form a complete sentence.

SEDRIS_T031: 6.4.3, 1st paragraph, 1st sentence
Change to read "The *axis-angle* representation $(\boldsymbol{n}, \theta)$, for a given orthonormal basis, is a representation of a PVR convention rotation $\boldsymbol{R}_n(\theta)$."

Rationale: Reworded to improve clarity.

SEDRIS_T032: 6.4.4.1, 1st paragraph, 1st and 2nd sentences
Change to read "Principal rotations are defined with respect to a given orthonormal basis for 3D Euclidean space. Unit axis vectors are represented in that basis by the coordinate 3-tuples: $\boldsymbol{x} = (1 \;\; 0 \;\; 0)^T$, $\boldsymbol{y} = (0 \;\; 1 \;\; 0)^T$, and $\boldsymbol{z} = (0 \;\; 0 \;\; 1)^T$."

Rationale: Reworded to improve clarity.

SEDRIS_T033: 6.4.4.2, 1st paragraph, 2nd sentence
Change to read "There are twelve distinct ways to select a sequence of three principal axes and apply the principal rotations (24 if left-handed axes are considered)[19]."

Rationale: Reworded to improve clarity.

SEDRIS_T034: 6.4.4.2, 2nd paragraph, last sentence
Change to read "Thus (α, β, γ) in the z-x-z Euler convention is the composite of a principal rotation of α about the z-axis first, β about the x-axis second, and γ about the z-axis again for the third rotation."

Rationale: Reworded to improve clarity.

SEDRIS_T035: 6.4.4.2, 4th paragraph
Change to read "There are three ways to realize an Euler angle convention. Each Euler angle convention can be realized in conjunction with PVR or CFR conventions. In the PVR convention, the three principal rotations may either be rotations about the original axes, or about the successively rotated axes. In the case of successively rotated axes, let $\tilde{\boldsymbol{x}}, \tilde{\boldsymbol{y}}, \tilde{\boldsymbol{z}}$ denote the principal axes after the successive rotations are applied to the original $\boldsymbol{x}, \boldsymbol{y}, \boldsymbol{z}$ axes. To distinguish between these two coordinate bases, coordinates with respect to the (static) original basis $\boldsymbol{x}, \boldsymbol{y}, \boldsymbol{z}$ shall be termed *space-fixed* coordinates and those with respect to the successively rotated $\tilde{\boldsymbol{x}}, \tilde{\boldsymbol{y}}, \tilde{\boldsymbol{z}}$ axes shall be termed *body-fixed* coordinates. It is useful to think of the $\tilde{\boldsymbol{x}}, \tilde{\boldsymbol{y}}, \tilde{\boldsymbol{z}}$ as attached to a rigid entity that will be rotated. In the CFR convention, the realization is similar to the PVR body-fixed case in that the rotation angles are measured from the successively rotated axes (see Equation (6.1)). These three realizations of (α, β, γ) in the $A_1 - A_2 - A_3$ Euler convention (in right-to-left operator order) are:"

Rationale: 1st, 4th, and 5th sentences reworded, and new 2nd sentence added, to improve clarity.

Clause 7: Reference datums, embeddings, and object reference models

SEDRIS_T036: 7.3.3, Table 7.11
Change the first sentence of the "STT parameters" Element to read "Parameter symbols shall be listed in a specified order each having a name, optionally a description, and a unit of measure (or unitless).".

Rationale: Reworded for clarity.

Clause 8: Spatial reference frames

SEDRIS_T037: 8.4, NOTE, 2nd and 3rd sentences
In each sentence, change "compound coordinate reference frame" to read "compound coordinate reference system".

Rationale: Modify wording to match current edition of ISO 19111.

SEDRIS_T038: 8.5.1, Table 8.2
Change the last sentence in Element "CS coordinate-component names and/or symbols" to read 'In addition, if the CS is 3D, the third coordinate-component may optionally be identified as the "vertical-coordinate-component".'

Rationale: Clarity.

SEDRIS_T039: 8.5.1, Table 8.2 and 8.7.1, Table 8.46
In the "ORM constraint" Elements, change "allowable" to read "applicable".

Rationale: Consistency in wording.

SEDRIS_T040: 8.5.1
Add a new sentence immediately following Table 8.2 that reads: "An ORM is *applicable* to an SRFT if the object associated with the ORM satisfies the object or object type specification of the SRFT, and the ORM satisfies the ORM constraint specification of the SRFT.", and update the Index entry for "applicable ORM to SRFT" to point here, rather than to Clause 12.

Rationale: The applicability of an ORM to an SRFT needs to be discussed here, and not in Clause 12.

SEDRIS_T041: 8.7.1, 1st sentence
Change "*spatial reference frame set* (SRFS)" to read "*SRF set*".

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

SEDRIS_T042: 8.7.1, 5th paragraph, in the sentence just prior to Table 8.47
Insert "(SSM)" immediately following the term "SRF set member".

Rationale: Clarity and consistency.

SEDRIS_T043: 8.7.6, Table 8.58
In the "Notes" Element, change "SRFS" to read "SRF set".

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

SEDRIS_T044: 8.7.7, Table 8.60
In the "Notes" Element, change "SRFS" to read "SRF set".

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

Clause 10: SRF operations

SEDRIS_T045: 10, title
Rename Clause 10 from "SRF operations" to read "Operations".

Rationale: There are operations independent of any SRF. Example, Convergence of the Meridian.

Clause 11: Application program interface

SEDRIS_T046: 11.1, penultimate paragraph
Change “SRF Sets” to read “SRF sets”.

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

SEDRIS_T047: 11.1, penultimate paragraph
Add as the penultimate sentence in this paragraph: ‘In this clause, the prefix “SRFS_” is used to denote identifiers related to SRF sets, and the prefix “SRFSM_” is used to denote identifiers related to SRF set members.’.

Rationale: Clarifies the relationships between the abbreviations and the abbreviated concepts.

SEDRIS_T048: 11.2.7.9.1
Change “SRFS members” to read “SRF set members”, and change “the SRFS defined” to read “each SRF set defined”.

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

SEDRIS_T049: 11.2.7.9.2 - 11.2.7.9.7
Change “SRFS” to read “SRF set”.

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

SEDRIS_T050: 11.2.7.9.8
Change “SRFS” to read “SRF set in”.

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S, and add “in”.

SEDRIS_T051: 11.2.9.2.11
In the 1st sentence, change “SRFS member code” to read SRF set member code”.

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

SEDRIS_T052: 11.5
In the 2nd sentence, change "SRFS member" to read SRF set member".

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

SEDRIS_T053: 11.5, EXAMPLE
Change "SRFS member" to read SRF set member".

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

SEDRIS_T054: 11.5, Table 11.52
In the "Semantics" Element, 1st paragraph, change "SRF Set member" to read "SRF set member".

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

Clause 12: Profiles

SEDRIS_T055: 12.1
Replace 12.1 with the following:

"A *profile* identifies a subset of this International Standard that has been specified to meet the needs of a specific application area. Only those subsets that can define, represent and/or process spatial positions shall be allowed. The core of a profile is a specified set of SRFTs, along with an applicable set of ORMs, and sets of SRFs and/or SRF sets that can be specified using these SRFTs and ORMs. A profile definition also may include error criteria for conformance (see Clause 14) of any functional implementations of operations that apply to the SRFs included in the profile. The default profile requires support for all SRFTs and ORMs specified in this International Standard. Additional profiles may be added by registration (see Clause 13).

An SRM profile specification includes:

a) a description of the profile (see 13.2.4),

b) a specification of a non-empty subset of standard and registered ORMs, such that each ORM in the set shall be applicable to at least one SRFT specified in c,

c) a specification of a non-empty subset of the set of standard and registered SRFTs such that for each SRFT in the set, there is at least one ORM specified in b that is applicable to that SRFT,

d) specifications of subsets of standard and registered SRFs and SRF sets based on SRFTs specified in c, and applicable ORMs in b; these subsets shall not both be empty,

e) a (possibly empty) subset of the set of standard and registered DSSs, and

f) optional specifications of error criteria, consisting of an accuracy domain template and positional, directional, and ratio error bounds, for SRFTs specified in c.

Accuracy domain templates and error criteria are defined in 14.2.1. The "default" profile is specified in 12.3. Guidelines for registering profiles are in 13.3.12. The proposal format for profile registration is provided in H.13. Conformance requirements are specified in 14.2.**"**

Rationale: This clause should not describe anything other than specifications and rules for forming profiles. Paragraphs describing concepts about ORM, SRFT and Error criteria/Accuracy domain are moved to other clauses (8 and 14) where such concepts are discussed. Replacement makes use of consistent terminology that will appear in the remainder of the clause, and clarifies the statements for specification of a profile.

SEDRIS_T056: 12.2, Table 12.1
Make the following changes to the Specification field of the following table Elements.

- ORM profile set: replace the Definition with "A non-empty subset of standard and registered ORMs, such that each ORM in the subset shall be applicable to at least one SRFT in the profile.".
- SRFT profile set: replace the Definition with "A non-empty subset of standard and registered SRFTs, such that for each SRFT in the subset, there is at least one ORM in the profile that is applicable to that SRFT.".
- SRF profile set: replace the Definition with "A subset of the standard and registered SRFs that are derived from an SRFT in the profile, and specifying an ORM in the profile.".
- SRFS profile set: replace the Definition with "A subset of the standard and registered SRF sets that are derived from an SRFT in the profile, and such that at least one ORM specified in the profile satisfies the ORM constraint of the SRF set.".
- SRFT accuracy: replace main Definition with "This optional element may be repeated for single SRFTs or groups of SRFTs in the profile. An SRFT in the profile shall appear in at most one of these elements.".
- SRFT accuracy: replace **SRFT label(s)** Definition with "The label(s) of the SRFT in the profile.".

Rationale: Consistency in use of terms. For **SRFT accuracy**, main definition changed to avoid requiring error criteria for each SRTF in a profile; for example, a profile for data transmission should not be required to specify error criteria.

SEDRIS_T057: 12.2, Table 12.1 and 12.3, Table 12.2
In the Element column, change "ORM profile set" to read "ORM(s)", change "SRFT profile set" to read "SRFT(s)", change "SRF profile set" to read "SRF(s)", change "SRFS profile set" to read "SRF set(s)", change "DSS profile set" to read "DSS(s)", and change "SRFT accuracy" to read "Error criteria".

Rationale: Repeating "profile" in each element name in the Profile specification table is redundant and inconsistent in style. "SRFS" is easily confused with plural SRFs and source SRF_S (see T014 above). Change element "SRFT accuracy" to match the changes in the text (see SEDRIS_T055).

SEDRIS_T058: 12.2, 3rd - 6th paragraphs
Replace with the following:

"An implementation conforms to the computational accuracy requirement of a profile if for every SRF that is included in the profile or is a member of an SRF Set that is included in the profile, positional, directional and ratio errors for operations on SRF coordinates in the accuracy domain shall not exceed the positional, directional and ratio error bounds (if any) specified in the error criteria element applicable to both the ORM and SRFT of the SRF. These requirements assume computational digital accuracy at least as accurate as double precision, as specified in IEC 60559.

Positional error may be estimated from coordinate values using the methods in I.6. Directional errors apply to spatial operations that compute an angle. Ratio errors apply to spatial operations that compute point distortion. For implementations of geodesic distance (see 10.7.2), the computational accuracy requirement shall apply to distances not exceeding 95% of the longest geodesic distance on the applicable oblate ellipsoid RD."

Rationale: Incorrect, unnecessary statements and phrases removed or corrected. Consistent terminology is used. Other concepts in 12.1 are covered in the revised 12.1 (above).

SEDRIS_T059: 12.3, 1st paragraph, 3rd sentence
Change to read "This profile includes all ORMs, SRF templates, SRF sets, SRF set members, and standardized SRFs as defined in this International Standard. Error criteria are provided for conformance of implementations of the corresponding operations and functionality.".

Rationale: No conditions are imposed for RTs. Clarity for relationship between error criteria and implementations of operations.

SEDRIS_T060: 12.3, Table 12.2
Make the following changes to the Specification field of the following table Elements.

- **ORM profile set:** remove the phrase "and RTs".
- **SRFS profile set:** replace "SRFSs" with "SRF sets".
- **SRFT accuracy:** adjust font style (italic) for non-italicized *a* and *f*.

Rationale: No conditions are imposed on RTs. Consistency in use of terms, and style.

NOTE:
Due to the scope and complexity of the above comments, the SEDRIS Organization has produced an updated Clause 12 that includes all above changes, as well as the editorial comments that have been identified, and can be made available for review.

Clause 13: Registration

SEDRIS_T061: 13.1
Replace with:

"This clause specifies the rules and guidelines that shall be followed in preparing registration proposals. Registration proposals include required information for new SRM registered items, as well as accompanying administrative information (see Annex H). The guidelines in 13.2 shall apply to all SRM registered items. Additional guidelines applicable to specific SRM concepts are specified in 13.3."

And retain the 5th paragraph (ISO/IEC 9973 allows for ...) as the new second paragraph.

And remove Footnote 30.

Rationale: The 13.1 content is redundant with respect to 4.14 Registration.

SEDRIS_T062: 13.2.1 b)
Change "… that is used to denote …" to read "… that is assigned by the registration authority to denote …", and change Footnote 31 to read "Uniqueness is only within the set of instances of each SRM concept, for example: RDs or ORMs.".

Rational: Correct rendition of the process and clarified footnote**.**

SEDRIS_T063: 13.2.1
Combine first list item c) with second list to read:

> "c) other concept-dependent information as required in this International Standard that may include the following elements:
>
> 1) a description, and
>
> 2) references."

Rationale: Clarity.

SEDRIS_T064: 13.2.1, last sentence
Change to " In specifying an SRF set, assigning labels to the set members is optional (see 8.7.1)."

Rationale: Clarity. And "... in the case of some ..." is vague.

SEDRIS_T065: 13.2.3, 3rd paragraph, last sentence
Change "SRFS" (2 places) to read "SRF set".

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

SEDRIS_T066: 13.2.4, 1st paragraph
Change "or" to read "and/or".

Rationale: Clarify that the "or" is inclusive.

SEDRIS_T067: 13.3.1 e), 1st sentence
Change "coordinate symbols" to "coordinate-component symbols".

Rational: Use correct terminology.

SEDRIS_T068: 13.3.1 f) - k)
Change "coordinate symbols" to "coordinate-components".

Rational: Use correct terminology.

SEDRIS_T069: 13.3.1 j)
Spell out COM: convergence of the meridian.

Rational: Clarity.

SEDRIS_T070: 13.3.2 b), last sentence
Change to read "STT parameter symbols shall be listed in a specified order each having a name, optionally a description, and a unit of measure (or unitless).".

Rationale: Reworded for clarity.

SEDRIS_T071: 13.3.4 a)
Change to read "A list of RDs that comprise the RD set shall be specified.".

Rationale: Reworded for clarity.

SEDRIS_T072: 13.3.5 a)
Change to read "The commonly known or published name(s) as cited in the reference(s) shall be specified.".

Rationale: Reworded for clarity.

SEDRIS_T073: 13.3.5 b) - g)
Combine and change to read:

b) The label of the reference ORM for the spatial object shall be specified as follows:

1) If the reference ORM for this object is standardized or registered, the label of that ORM shall be specified.

2) Otherwise, if the ORM is object-fixed for a physical object, the phrase "This is the reference ORM for" followed by the spatial object name shall be specified.

3) If neither 1) or 2) apply, the string “none” shall be specified.

c) Binding information shall be specified according to case.

1) Case: If the ORM is object-fixed and the spatial object is a physical object, the date that the ORM component RDs were bound in object-space shall be specified. This case includes time-fixed instances of dynamic ORMs for a physical object.

If the spatial object is the Earth, and if Greenwich, UK is not contained in the *x*-positive *xz*-half-plane of the normal embedding, then the significant location contained in the *x*-positive *xz*-half-plane of the normal embedding shall be specified.

2) Case: If the ORM is based on ORMT BI_AXIS_ORIGIN_3D and if the ORM binding complies with a standard OBRS, the label of that OBRS shall be specified.

3) Case: If the ORM is for an abstract object, the string “none” shall be specified.

Rationale: Presentation clarity. Matches the content of the corresponding specification table, Table 7.33.

SEDRIS_T074: 13.3.5 h)
Relabel as **d)**, and change to read “The approximate region of object-space to which the model applies, expressed as either a spatial extent or the description as specified in the reference, shall be specified.”

Rationale: Clarity.

SEDRIS_T075: 13.3.5 i)
Relabel as e**).**

Rationale: Style.

SEDRIS_T076: 13.3.5 j)
Relabel as **f),** and change to read ’The label of the ellipsoidal RD, if any; otherwise “n/a”.’

Rationale: Simplification of the requirement.

SEDRIS_T077: 13.3.5 k)
Relabel as **g),** and change “... transformation shall be specified (see 13.3.6).” to read “... transformations shall be specified in accordance with 13.3.6.”

Rationale: More complete statement of the requirement.

SEDRIS_T078: 13.3.6 list
Pre-append with:

a) The label of the standardized or registered ORM that this RT transforms shall be specified.

b) A non-normative description of the extent and/or the spatial bounds of the region for which this reference transformation is applicable. Angles may be expressed in arcdegrees (°) in order to avoid a loss of precision.

c) The label of the standardized or registered STT that is used to specify the transformation.

Rationale: Guidelines for these required elements are missing.

SEDRIS_T079: 13.3.6 a) 1) i) - iii)
Pre-append each with ": ".

Rational: Match the format specified in Table 7.34.

SEDRIS_T080: 13.3.6 a) 2), 1st sentence
Change "… and the associated error estimates shall be specified." to read "... and associated error estimates may be specified in a form given in e.1.i - iv."

Rationale: Error estimates are not mandatory and the format was not given.

SEDRIS_T081: 13.3.6 Example
Change to read:

"EXAMPLE Guideline d: $\Delta x = 12 : \sigma 5, \Delta y = -133 : \pm 25, \Delta z = 0$: assumed precise ."

Rationale: The format of the error estimates did not conform to the requirement.

SEDRIS_T082: 13.3.7 d)
Add a new list item as "Optionally, figures that explain and illustrate the OBRS may be specified.".

Rationale: Match the specification table for OBRSs.

SEDRIS_T083: 13.3.8 b)
Change to read "The object or object type shall be specified as abstract or physical, and if physical, one of: the Earth, planet, satellite, or the Sun; and, optionally, any restrictions on the object."

Rationale: Clarified wording.

SEDRIS_T084: 13.3.8 c)
Change "allowable ORMs" to "applicable ORMs".

Rationale: Use defined terminology.

SEDRIS_T085: 13.3.8 d)
Change to read "The label of a standard or registered CS, compatible with ORM constraints, shall be specified.".

Rationale: Clarify the object of compatibility.

SEDRIS_T086: 13.3.8 e)
Change to read:

e) Each of the CS coordinate-component names and/or symbols shall be specified as follows:
   1) SRF-specific names and/or symbols for the coordinate-component names and/or symbols, if any. If all coordinate-component names and symbols are same as the CS, the phrase "Same as the CS" shall be used.
   2) The vertical coordinate-component, if applicable, shall be designated.

Rationale: Clarified wording.

SEDRIS_T087: 13.3.8 f) - h)
Change to read:

f) The SRFT parameters shall be specified as follows:
   1) CS and RD parameters, if any, and SRF parameters that are not specified by a CS parameter binding rule in (g).
   2) If no parameters are required, this element shall specify "none".

g) The CS parameter binding rules shall be specified as follows:
   1) Rules for binding CS and RD parameters.
   2) Rules for binding CS and SRF parameters.
   3) If no binding rules are required, this element shall specify "none".

h) The coordinate valid region (see 8.3.2.4) shall be specified as follows:
   1) An optional restriction of the domain of the CS to a valid region may be specified.
   2) If a valid region is specified, optionally an extended valid region may also be specified.
   3) If both are unspecified, then there are no additional constraints on coordinate validity beyond those of the CS. This is indicated by the phrase "No additional restrictions".

Rationale: Clarification.

SEDRIS_T088: 13.3.8 m)
Remove " … of the SRF structure …".

Rational: Remove vague wording.

SEDRIS_T089: 13.3.8, EXAMPLE 4
Change "coordinate" to read "coordinate-component" (2 places).

Rationale: Correct use of terms.

SEDRIS_T090: 13.3.8, EXAMPLEs 5, 6 and 7
Correct for renumbering of the list "f.2" to "f.1", "f.3" to "f.1", and "g.2" to "g.1".

Rationale: Consistency with the previous list update.

SEDRIS_T091: 13.3.9 d)
Change to read:

d) The coordinate valid region (see 8.3.2.4) shall be specified as follows:
   1) An optional restriction of the domain of the CS to a valid region may be specified.
   2) If a valid region is specified, optionally an extended valid region may also be specified.
   3) If both are unspecified, then there are no additional constraints on coordinate validity beyond those of the CS. This is indicated by the phrase "No additional restrictions".

Rationale: Clarified wording.

SEDRIS_T092: 13.3.9 f)
Remove " … of the SRF structure …".

Rational: Remove vague wording.

SEDRIS_T093: 13.3.10 c) 2)
Change "allowable" to "applicable".

Rationale: Use defined terminology.

SEDRIS_T094: 13.3.10 d)
Change to read "The coordinate valid region (see 8.3.2.4) shall be specified as follows:".

Rationale: Clarity.

SEDRIS_T095: 13.3.10 first list item e) 1) – 2)
Change to read:

1) The set of members, by individual listing, or
2) An algorithm generating all set members, including for each: an optional label, a short name, coordinate valid region, parameter values, and notes. If any member is labelled, all members shall be labelled.

Rationale: Reworded for clarity.

SEDRIS_T096: 13.3.10 f)
Remove " … of the SRF structure …".

Rational: Remove vague wording.

SEDRIS_T097: 13.3.10, Example 6
Change "SRFS" to read "SRF set".

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

SEDRIS_T098: 13.3.10, list item a), following Example 7
Change to read "The label of the SRF set member shall be specified only if all SRF set member labels are specified.".

Rationale: Clarity, and see T014 above. Easily confused with plural SRFs and source SRF_S.

SEDRIS_T099: 13.3.10, list item b), following Example 7
Change to read "A short name as published or as commonly known, and an optional description shall be specified.".

Rationale: Clarification.

SEDRIS_T100: 13.3.10 c)
Change to read "The coordinate valid region (see 8.3.2.4) shall be specified as follows:".

Rationale: Clarity.

SEDRIS_T101: 13.3.10 e), following Example 7
Remove " … of the SRF structure …".

Rational: Remove vague wording.

SEDRIS_T102: 13.3.10, sentence before Example 8
Change to read "These specifications shall be explicit by listing for all members, or they shall be implicit by algorithmic specification for all members.".

Rationale: Clarity.

SEDRIS_T103: 13.3.10, Example 8
Change to read:
'EXAMPLE 8 Guideline a: "ZONE_XIX".'

Rationale: Example did not match the guideline.

SEDRIS_T104: 13.3.11, list
Reverse the ordering of c) and d).

Rationale: Match the ordering of the specification elements.

SEDRIS_T105: 13.3.12, list
Change to:

a) A non-empty subset of the standardized and registered ORMs shall be specified, such that each ORM in the subset shall be applicable to at least one SRFT as specified in guideline (b).

b) A non-empty subset of standardized and registered SRFTs shall be specified, such that for each SRFT in the subset, there is at least one ORM as specified in guideline (a) that is applicable to that SRFT.

c) A subset of the standardized and registered SRFs shall be specified, including only SRFs derived from SRFTs as specified in guideline (b), and specifying an ORM as specified in guideline (a). The string "none" shall denote an empty set.

d) A subset of the standardized and registered SRF sets shall be specified, including only SRF sets derived from SRFTs as specified in guideline (b), and such that at least one ORM as specified in guideline (a) satisfies the ORM constraint of the SRF set. The string "none" shall denote an empty set.

e) The subsets specified in guidelines (c) and (d) shall not both be empty.

f) A subset of the standard and registered DSSs shall be specified. The string "none" shall denote an empty set.

g) Error criteria may be specified for one or more SRFTs, as follows:

    1) The label of the SRFT shall be specified. Multiple SRFT labels may be grouped together.

    2) The error bounds for the SRFT(s) shall be specified as follows:

        i) The positional error bound, in metres, shall be specified.

        ii) The directional error bound, in radians, shall be specified.

        iii) The ratio error bound shall be specified.

        iv) Error bounds for one or more subsets of the ORMs may also be specified.

    3) An accuracy domain template for the SRFT(s) shall be specified.

Rationale: Reworded for clarity.

SEDRIS_T106: 13.3.12, EXAMPLE 4
Change to read "Guideline d: none.".

Rationale: Consistency in use of terms

SEDRIS_T107: 13.3.12, EXAMPLEs 5, 6, 7 and 8
Correct for renumbering of the list "e" to "f", "f1" to "g.1", "f 2" to "g.2", and "f 3" to "g.3".

Rationale: Consistency with the previous list update.

NOTE:
Due to the scope and complexity of the above comments, the SEDRIS Organization has produced an updated Clause 13 that includes all above changes, as well as the editorial comments that have been identified, and can be made available for review.

Clause 14: Conformance

SEDRIS_T108: 14.1, 2nd paragraph
Change to read "Functional implementation and exchange format conformance are based on profiles. Profiles are defined in Clause 12. Conformance of an application to a profile is defined in 14.5."

Rationale: References definition of "profile" rather than repeating it here.

SEDRIS_T109: 14. 1, 3rd paragraph
Delete this paragraph.

Rationale: This paragraph is moved and modified to improve the overall flow of this clause. See the next Technical comment for 14.2, below.

SEDRIS_T110: 14.2
Replace the content of 14.2 with new subclauses 14.2.1 and 14.2.2, as follows:

'14.2.1 Functional accuracy

The computational accuracies of SRF operations are required in determining the (degree of) conformance of functional implementations of the SRM. This clause addresses the computational accuracy requirements for SRF operations.

Computational accuracy requirements are specified as the maximum computational error for an implementation of an SRF operation over a subset of the CS domain of an SRF, termed an accuracy domain. The computational accuracy requirement does not apply to a sequence or chain of SRF operations, only to each individual SRF operation in the sequence. This clause does not directly address the software environment, performance, or resource requirements of applications or implementations that conform to profiles of this International Standard. This clause does not define the application requirements or dictate the functional content of applications that use SRM implementations.

An *accuracy domain* is a subset of the CS domain of the SRF expressed in terms of coordinate-component value constraints. Accuracy domains for all SRFs derived from the same SRFT may be conveniently specified using an accuracy domain template for that SRFT.

An *accuracy domain template* for an SRFT is a subset of the CS domain expressed in terms of coordinate-component value constraint expressions that are parameterized with SRFT parameters and/or ORM RD parameters. Substituting parameter values for a given SRF derived from the SRFT produces an accuracy domain for that SRF.

EXAMPLE For SRFT TRANSVERSE_MERCATOR, the upper and lower constraints on coordinate-component λ given by

$$-3{,}5\left(\frac{\pi}{180}\right) \le \lambda - \lambda_{origin} \le 3{,}5\left(\frac{\pi}{180}\right),$$

are dependent on the SRFT parameter λ_{origin}.

The *error criteria for operations on the SRFs* derived from a given SRFT are determined by an accuracy domain template specification together with a set of error bounds. Operations on the SRFs derived from the SRFT satisfy the error criteria if the error at any coordinate in the accuracy domain, determined by the accuracy domain template, is less than the error bounds for those operations.

A *computational accuracy requirement* of a profile consists of the error criteria specification for each of the SRFTs belonging to the profile. An implementation conforms to the computational accuracy requirement of a profile if, for each SRFT in the profile, each implemented operation on the SRFs derived from the SRFT satisfies the error criteria for that SRFT.

14.2.2 Functional conformance

A functional implementation of the SRM *conforms* to a standard or registered profile P, if the following conditions are satisfied:

a) Each SRM concept instance in P shall be identified by the label and code specified for that concept instance in this International Standard or by registration; this includes, but is not limited to, ORMs, RTs, SRFTs, SRFs, SRF sets, and DSSs,

b) The implementation shall support the data types required for the API functionality of each of the SRM concept instances in P. Additional functionality and data types may be supported by an implementation. If the implementation supports the API functionality specified in this International Standard, the methods and functions shall use the data types specified in this International Standard.

c) The implementation shall support the full functionality of all operations defined for each SRM concept instance in P in accordance with Clause 5, Clause 6, and Clause 10,

d) The data types and data structures shall match the specification of the corresponding data types as defined in this International Standard,

e) The units of measure that are used in data structures shall be as specified in this International Standard (see 4.12), and

f) The implementation shall conform to the computational accuracy requirement of profile P.

A functional implementation of the SRM is free to exceed the requirements of any profile to which it claims conformance.'

Rationale: Incorporates definitions of "accuracy domain" and "accuracy domain templates" (moved from Clause 12) and includes definitions of "error criteria for operations" and "computational accuracy requirement" of a profile to improve the overall flow of this clause. Also consolidates the list to focus on elements relevant to functional conformance.

SEDRIS_T111: 14.3
Change to read as follows:

"An exchange format *conforms* to a standard or registered profile P, if the following conditions are satisfied:

a) Each SRM concept instance in P shall be identified by the label and/or code specified for that concept instance in this International Standard or by registration; this includes, but is not limited to, ORMs, RTs, SRFTs, SRFs, SRF sets, and DSSs,

b) The data types and data structures shall match the specification of the corresponding data types as defined in this International Standard,

c) All data types and data structures shall be used to represent coordinates in their corresponding SRF as defined in 11.9, and

d) The units of measure that are used in data structures shall be as specified in this International Standard (see 4.12)."

Rationale: Consolidates the list to focus on elements relevant to exchange formats.

SEDRIS_T112: 14.4
Change to read as follows:

"A language binding of the SRM API to a programming language *conforms* to the SRM, if the following conditions are satisfied:

a) All functions specified in Clause 11, including output values and error conditions, shall be so bound as to present the specified interfaces as closely as possible given the strictures of that programming language,

b) All data types specified in this International Standard shall be represented in that programming language,

c) The resulting language binding shall follow the cultural conventions of that programming language, and

d) The language binding shall provide a mapping of SRM concept instance labels to identifiers and/or constants within the language in such a manner as to maintain the symbolic names of this International Standard as closely as possible within the strictures of the programming language for which the binding is created.

Language bindings are allowed to append additional identification to the beginning or end of SRM concept instance labels as necessary to make the symbolic names corresponding to those labels unique and identifiable as part of the subject language binding."

Rationale: Punctuation and wording modified to improve clarity.

SEDRIS_T113: 14.5
Change to read as follows:

"An application that uses the SRM API shall be *conformant*, if the following conditions are satisfied:

a) The use of any functionality of the SRM API by the application shall conform to the provisions of Clause 11 as it applies to that functionality,

b) Invocations of the SRM API shall pass all parameters in the required units as specified in 4.12, and

c) All error messages received from the API shall be processed as required by this International Standard (see 11.3.1).

An application shall conform to a profile P, if each invocation by the application of an operation involving SRM concept instances is restricted to only those SRM concept instances in P."

Rationale: Punctuation and wording modified to improve clarity.

NOTE:
Due to the scope and complexity of the above comments, the SEDRIS Organization has produced an updated Clause 14 that includes all above changes, as well as the editorial comments that have been identified, and can be made available for review.

Annex G: Change and deprecation plan

SEDRIS_T114: G.4.3, b)
Change "added to" to read "incorporated into".

Rationale: More precise terminology (consistent with ISO).

Annex H: Templates for registration proposals

SEDRIS_T115: H.11, Table H.11
In the Element column, change “SRFS label” to read “SRF set label”.

Rationale: See T014 above. Easily confused with plural SRFs and source SRF_S.

SEDRIS_T116: H.13, Table H.14
In the Element column, change “ORM profile set” to read “ORM(s)”, change “SRFT profile set” to read “SRFT(s)”, change “SRF profile set” to read “SRF(s)”, change “SRFS profile set” to read “SRF set(s)”, change “DSS profile set” to read “DSS(s)”, and change “SRFT accuracy” to read “Error criteria”.

Rationale: Repeating "profile" in each element name in the Profile specification table is redundant and inconsistent in style. “SRFS” is easily confused with plural SRFs and source SRF_S (see T014 above). Change element "SRFT accuracy” to match the changes in the text (see SEDRIS_T055).

Bibliography

SEDRIS_T117: Bibliography table
Delete these citations from the table: RPASFV, BORK, CAR77, EWIN, PMAP, HELL, HOKE, KOVA, SOFA, N330, ME13, F3485, T52411, T52418, T52412, 600008, 2405, 83581, GFTL, and YANG.

Rationale: No longer cited in the text.