

Draft Resolutions for Public Review Responses on BSR E1.59, Entertainment Technology -- Object Transform Protocol (OTP)

Referenced document: BSR E1.59, Entertainment Technology--Object Transform Protocol (OTP) [document number CP/2018-1034r3]

ANSI public review period: 21 February through 6 April 2020

Question: Do you recommend that the standards committee accept BSR E1.59, Entertainment Technology--Object Transform Protocol (OTP) [document number CP/2018-1034r3], as an American National Standard, that its requirements are not too lax, too onerous, or too vague, nor that it would unreasonably negatively impact materially affected parties in the entertainment industry? Please indicate "Yes" (accept it), "Yes with comments," or "No with reasons" (don't accept it).

Results: Comments and resolutions are shown on the following pages.

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
1	PR3	Harper	true	true	2	Normative References
Comment						
The IETF no longer uses NeuStar for secretariat services: The address listed for the IETF is incorrect.						
Resolution		Resolution Description				
Accept		The address has been corrected in the document.				
Actionee		Discussion				
Dan & Maya						

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
2	PR3	Harper	true	true	2	Normative References
Comment						
Is there a reason RFC 2236 (IGMP v2) is cited instead of RFC 3376 (IGMP v3)? Same for Multicast Listener Discovery (RFC 2710 is cited, RFC 3810 is						
Resolution		Resolution Description				
Reject		E1.59 only requires the features of of IGMPv2/MLDv1 and does not require any of the new features added to the later revisions IGMPv3/MLDv2. The later revisions are backwards compatible to the versions specified in E1.59				
Actionee		Discussion				

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
3	PR3	Harper	true	true	2	Normative References
Comment						
RFC 4330 has been obsoleted by RFC 5905.						
Resolution		Resolution Description				
Accept		Document updated to refer to NTP and suggest use of the SNTP subset.				
Actionee		Discussion				
Dan & Maya		Proposed resolution: Change Section 2 to refer to [NTP] Change 8.4 to "Implementors are advised to consider techniques such as the SNTP subset of [NTP]..."				

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
4	PR3	Harper	true	true	4.1	Coordinate System
Comment						
I find the use of "clockwise" confusing and suggest removing it from the table.						
Resolution		Resolution Description				
Accept in Principle		Removed column from table and updated text for clarification.				
Actionee		Discussion				
Dan & Maya		Table 4-2 DM - We have text above referring to "Rotation Positive", so we need to show the definition or remove defining rotation				

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
5	PR3	Harper	true	true	6.5	Sequence Number
Comment						
<p>The algorithm for detecting out-of-order packets results in discarding reordered packets when they could usefully be reassembled and processed. Consider the case of a Folio spanning multiple OTP Packets. The order in which packets within a Folio are received doesn't matter, so instead of treating a Page as lost if its packet arrives out of order, the packet could still be processed.</p> <p>When processing OTP Transform Messages, the Timestamp from the OTP Transform Layer could also be used for detecting reordering. Instead of prescribing a loss/reordering algorithm, can the document suggest one but allow implementations to use other more complicated algorithms?</p>						
Resolution		Resolution Description				
Accept		The Sequence Number field has been removed, and part of its purpose rolled into the Folio Number field. Potential sequencing algorithms are provided, but not mandated.				
Actionee		Discussion				
Dan & Maya						

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
6	PR3	Harper	true	true	15.2	Multicast Subscription
Comment						
There's some sort of weird font change partway through the first two sentences.						
Resolution		Resolution Description				
No Action Required		This formatting issue only appears in the pdf document. It will be checked prior to the next publication.				
Actionee		Discussion				
Dan Murfin		<p>Actually 15.1 - Multicast Addressing paragraph 3</p> <p>Removed text references, and referenced section number instead.</p>				

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
7	PR3	Harper	true	true	16.3,16.4	Rotation Module
Comment						
<p>There is no normative reference or definition of Euler rotations, the "x-convention" or the Tait-Bryan ZYX convention. (Appendix C is only informative.) Ideally this document would define the rotation scheme it is using (I'd suggest putting this definition in section 4), including being explicit about whether the rotations are extrinsic or intrinsic, which order the rotations occur in, and whether that is equivalent to another set of rotations that is intrinsic or extrinsic. E.g. "Rotations are done around an external fixed set of coordinate axes, first around the x-axis, then the y-axis, and then the z-axis. This is equivalent to intrinsic rotations (where the axes follow the object being rotated) around the z-axis, then the y-axis, then the x-axis."</p>						
Resolution		Resolution Description				
Accept in Principle		Added new normative section to document.				
Actionee		Discussion				
Dan & Maya						

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
8	PR3	Harper	true	true	16.3	Rotation Module
Comment						
All field description values state "Euler X rotation". Should there be "Euler Y rotation" and "Euler Z rotation" as well?						
Resolution		Resolution Description				
Accept		Document now has correct field descriptions.				
Actionee		Discussion				
Dan Murfin		Table 16-4				

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
9	PR3	Harper	true	true	16.4	Rotation Velocity/Acceleration Module
Comment						
The Note is in a random combination of bold and not bold						
Resolution		Resolution Description				
Accept		Document corrected.				
Actionee		Discussion				
Dan Murfin						

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
10	PR3	Harper	true	true	16.5	Scale
Comment						
"The scale of the Point in the X (or Y or Z) direction in unitless millionths. A value of 1 indicates that this point is at its reference size." Shouldn't this say "a value of 1,000,000 indicates that this point is at its reference size"?						
Resolution		Resolution Description				
Accept in Principle		Document updated to make this clear.				
Actionee		Discussion				
Dan Murfin		Table 16-6				

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
11	PR3	Harper	true	true	16.6	Parent
Comment						
Parent/child relationships between points are underspecified. I assume based on the specification that parent/child relationships can be nested as deeply (or shallowly) as one wants. For example, point A could have point B as a parent, and point B has point C as a parent. The first issue is related to cycles: I have found no language that prevents (using the previous example) point C having point A as a parent. The next issue is how to process relative transform information. Suppose that point A has B as its parent and has the relative bit set to 0, but B has C as a parent and its relative bit set to 1. Clearly, transform information for point B is relative to C. Is transform information for A also relative to C, or is it relative to a fixed origin and viewpoint? (One could imagine points A and B both being part of the same physical object, with point B representing the object as a whole, but the system is designed to report transform information for A and B in absolute coordinates. Hence B is A's parent (to represent that A is part of the object represented by B) and has the relative bit clear. Then this system gets mounted on a larger moving object, represented by point C, but the transform data from B (and A) is relative to C, so the Parent Module indicating C is B's parent has the relative bit set.)						
Resolution		Resolution Description				
Accept		Renamed Parent to Reference Frame, and made it always relative. Expanded on rules for referencing, and included an				
Actionee		Discussion				
Dan Murfin		Discussion via the reflector: No limit to levels Mandate no circular references (implementor responsibility) Remove relative flag				

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
12	PR3	Harper	true	true	B.1	Transform Message Example
Comment						
The UUID for the CID is not valid per RFC 4122: the version nibble in the example is 0xf; RFC 4122 only lists versions 1 thru 5. The same issue exists in tables B-2 thru B-6. (Feel free to ignore this comment.)						
Resolution		Resolution Description				
Accept in Principle		Updated the examples in the document to use valid RFC 4122 UUIDs.				
Actionee		Discussion				
Dan & Maya		Table B-1				
		DM - The version is actually 0x6 in the current document.				

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
13	PR3	Harper	true	true	C.2	Using Euler Angles in This Standard
Comment						
The description of the Tait-Bryan ZYX convention does not mention whether those are extrinsic or intrinsic rotations. I believe they are intrinsic as						
Resolution		Resolution Description				
Accept		Document now defines rotation as intrinsic.				
Actionee		Discussion				
Dan & Maya		Figure C-2				

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
14	PR3	Harper	true	true	C.2	Using Euler Angles in This Standard
Comment						
Fig C-1: The diagram on the left is missing the y-axis (I assume the viewpoint is the same in both diagrams). The diagram on the right has the y-axis backward assuming the x, y, and z axes follow the right hand rule. The diagram on the right should have the x-axis on top of the image rotated on one side of the origin. It's unclear which points of the star in the diagram on the left correspond to which ones on the right. Adding a dot (or the text "TOP") to the image being rotated would help clarify. If my understanding of the diagrams and the rotation system is correct, then in the diagram on the right, we're looking at the backside of the rotated object.						
Resolution		Resolution Description				
Accept in Principle		The previous diagram had incorrect angles, and has been updated to more clearly show each axis and the context.				
Actionee		Discussion				
Dan Murfin						

Number	Review	Commenter	Response	Implemented	Section Number	Section Title
15	PR3	Harper	true	true	C.4.1	Direction Cosine Matrices
Comment						
(http://www.gregslabaugh.net/publications/euler.pdf is what I'm using to cross-reference here. It has the same cosine matrix as this appendix, but I'm not convinced it's the correct one for the convention used here.)						
In the entry for M_32, write as $\sin \alpha \cos \beta$ instead of $\cos \beta \sin \alpha$ so that all angles are in alphabetical order.						
There will always be at least 2 solutions for finding α , β , and γ from a cosine matrix.						
The solution for β doesn't mention that there will be two solutions. Using arcsin as described will return something in the range -90 to $+90$ degrees; $180-\beta$ is a second solution.						
The solution for β wasn't used in the formulas for α or γ , but the text indicates otherwise. When using the second solution for β (i.e. outside the -90 to $+90$ range), both arguments to atan2 must be negated. This solution for β does not work when β is ± 90 degrees, as $\cos(\beta)$ is 0, resulting in a zero denominator for atan/atan2.						
This section should mention that the given formulas only work if β is not ± 90 degrees and that these formulae only give one of two possible						
Resolution		Resolution Description				
Accept		Revised the cosine matrix definition and description.				
Actionee		Discussion				
Maya Nigrosh		In the entry for M_32, write as $\sin \alpha \cos \beta$ instead of $\cos \beta \sin \alpha$ so that all angles are in alphabetical				