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Computer graphics, image processing and environmental data representation	
Secretariat: BSI (United Kingdom)	

Document type: Summary of Voting On-line

Title: N 3947 ISO-IEC CD 18040 results

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Email of secretary: charles.whitlock@bsigroup.com

Committee URL: http://isotc.iso.org/livelink/livelink/open/jtc1sc24

Result of voting

Ballot Information

Ballot reference	ISO/IEC CD 18040 - CD 1
Ballot type	CD
Ballot title	Information technology -- Computer graphics, image processing and environmental data representation and coding of audio, picture, multimedia and hypermedia information -- Live actor and entity representation in mixed and augmented reality (MAR)
Opening date	2017-04-11
Closing date	2017-06-06
Note	

Member responses:

Votes cast (9)	Australia (SA) China (SAC) France (AFNOR) Japan (JISC) Korea, Republic of (KATS) Russian Federation (GOST R) Switzerland (SNV) United Kingdom (BSI) United States (ANSI)
Comments submitted (2)	Austria (ASI) India (BIS)
Votes not cast (1)	Egypt (EOS)

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 disapprove 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
Australia (SA)	Approval with comments	All	Ignore
China (SAC)	Approval as presented	Ignore	Ignore
France (AFNOR)	Abstention	Ignore	Ignore
Japan (JISC)	Approval with comments	Editorial	Ignore
Korea, Republic of (KATS)	Approval as presented	Ignore	Ignore
Russian Federation (GOST R)	Approval as presented	Ignore	Ignore
Switzerland (SNV)	Abstention	Ignore	Ignore
United Kingdom (BSI)	Approval as presented	Ignore	Ignore
United States (ANSI)	Disapproval of the draft	Ignore	Yes

Answers to Q.1: "Do you agree with approval of the CD text?"		
4 x	**Approval as presented**	**China (SAC)** **Korea, Republic of (KATS)** **Russian Federation (GOST R)** **United Kingdom (BSI)**
2 x	**Approval with comments**	**Australia (SA)** **Japan (JISC)**
1 x	**Disapproval of the draft**	**United States (ANSI)**
2 x	**Abstention**	**France (AFNOR)** **Switzerland (SNV)**

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**	
1 x	**Editorial**	**Japan (JISC)**
1 x	**All**	**Australia (SA)**
7 x	**Ignore**	**China (SAC)** **France (AFNOR)** **Korea, Republic of (KATS)** **Russian Federation (GOST R)** **Switzerland (SNV)** **United Kingdom (BSI)** **United States (ANSI)**

Answers to Q.3: "If you disapprove 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	United States (ANSI)
0 x	No	
8 x	Ignore	Australia (SA) China (SAC) France (AFNOR) Japan (JISC) Korea, Republic of (KATS) Russian Federation (GOST R) Switzerland (SNV) United Kingdom (BSI)

Comments from Voters		
Member:	Comment:	Date:
Australia (SA)	*Comment File*	2017-05-25 03:16:26
CommentFiles/ISO_IEC CD 18040 - CD 1_SA.docx		
Japan (JISC)	*Comment File*	2017-05-29 08:07:22
CommentFiles/ISO_IEC CD 18040 - CD 1_JISC.doc		
United States (ANSI)	*Comment File*	2017-05-24 15:35:28
CommentFiles/ISO_IEC CD 18040 - CD 1_ANSI.doc		

Comments from Commenters		
Member:	Comment:	Date:
Austria (ASI)	*Comment*	2017-05-29 17:35:23
Austria abstains.		
India (BIS)	*Comment*	2017-05-01 06:39:43
Approved as presented		

MB/ NC[1]	Line number	Clause/ Subclause	Paragraph/ Figure/Table	Type of comment[2]	Comments	Proposed change	Observations of the secretariat
JP1 001				ed	"section" is used in several sentences. "clause" should be used instead of "section"		
AU 002			Tables 7, 8	ed	Not referenced in text	Reference tables	
US 003	Pg 7	02		te	The CGRM is listed as a normative reference in the standard but does not seem to be referenced or applied within section 4 (concepts and reference model).	If the CGRM is normative, reference it as/where appropriate or remove the reference.	
US 004	Pg 7	03		ge		Recommend alphabetizing these terms.	
AU 005	1	03.01.10	1	ge	Do LAEs cover real objects? If so an example should be provided, as human being, animal or bird fall into the 'living physical' category only.	Provide example of real object that is classified as a LAE.	
AU 006	2	03.01.12	1	ge	Does the LAE capturer only capture video information? If not, the following re-word is suggested	[Second sentence] Replace 'A LAE's video information will…' with **LAE capturer information** will …	
AU 007	1	03.01.32	1	ed	'or scaled' (not and)		
AU 008	1	03.01.35	1	ge	Potential reword suggestion of a Virtual Live Actor and Entity to Virtual Actor and Entity (VAE), as the actor / entity isn't really live in this case.	Potential reword for clarity.	
US 009	Pg 8	03.01.8		te	The definition for Geographic coordinate system is defined as "A coordinate system which provided by sensor devices for defining a location of LAE."	This definition seems fairly abstract and it is unclear if this is a sensor device specific system or a defined GCS (e.g., latitude/longitude; an angular unit of measure, a prime meridian, and a datum; or all of the above). Recommend that the definition be clarified as intended.	
AU 010	1	03.01.8	1	ed	Missing 'is'	A coordinate system which is provided	

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

MB/ NC[1]	Line number	Clause/ Subclause	Paragraph/ Figure/Table	Type of comment[2]	Comments	Proposed change	Observations of the secretariat
AU 011		03.02		ed	Add UI User Interface and SDK Software Development Kit to list Also list should be alphabetical		
AU 012		04		ge	Clause 4 outlines the LAE components; then clauses 5-10 provide more detail – this should be stated		
AU 013	3	04.01	1	ed	'**is** defined according to **a** mixture of..'	Reword as suggested	
AU 014	5-7	04.01	1	ed	Augmented reality refers to the view of **the** real world environment whose elements **include** LAE and objects **that** can be augmented by computer-generated sensory. Augmented virtuality is the virtual environment that physical world elements i**ncluding** LAE **that** can be mapped and interacted within.	Reword as suggested	
AU 015	4-8	04.01	1	ed	Should this paragraph use the definitions defined in clause 3 (only adding the LAE additions as required for clarity)?		
AU 016	4,7	04.01	1	te	Real Environment and Virtual Environment are excluded from the MAR definition in the MAR-RM, so this should be noted for consistency	Note that Real Environment and Virtual Environment are not covered by the MAR spectrum. But that the LAE is in the Real Environment	
AU 017	4	04.01	2	ed	change first 'that' to 'who'	Reword as suggested	
AU 018	7	04.01	2	ge	Provide an example of an object that is an LAE, as it is not clear what objects are classified as LAEs	Provide example	
AU 019		04.01	Fig 1	te	Make it more clear that Real Environment and Virtual Environment are not included in MAR	As above	

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AU 020		04.02		ge	Would prefer if this section was shortened, as it's hard to follow when it jumps from all components to the first with very similar content	Potential shortening of all descriptions in 4.2, so it provides a better lead in to clause 5.	
AU 021		04.02	Fig 3	ed	Five components.. seems to be more in Fig 3? There seem to be 6 components in the figure	Reword	
AU 022		04.02	Table 1	ge	Table 1 not referenced in text. Also not clear which are components and what 'dimension' represents for first column. This should be 'component'?	Reference fig 1 and redo so it is consistent with fig 3	
AU 023		04.02.2 and 4.2.3		ed	Reorder paras so they are consistent with table 1		
AU 024	1	04.02.5	1	te	Will this only capture a LAE in a physical world 'aiming'? If not this should be something like the following	Replace A LAE in a physical world will act by aiming, to something like 'A LAE will perform actions in the physical world that will trigger events'	
AU 025	3	04.02.7		ed	Delete 'a' before webVR		
AU 026	1	04.02.7	1	ed	MAR world is not defined in clause 3	Add definition of MAR world to clause 3	
US 027	Pg 17	05		te	It appears that sections 5 through 10 build upon the concepts presented in section 4 to further define the basis of the standard to which an implementor would conform. In several cases, it seems that these sections provide example devices and then provide a high level organization of the inputs/outputs.	It is unclear if these sections convey the content necessary or the context/technical description for an implementor to be able to apply this standard. Recommend a review of this section to determine if some of the content belongs in section 4 and how to better expand technically upon the content that a user of the standard needs to be able to incorporate into a MAR design in order to be conformant with the standard.	

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AU 028	1	05.02.2	2	ge	Should this be just 'smart phone' rather than 'smart phone sensor'?	Reword as suggested	
AU 029	1	05.02.2	3	ed	Replace 'An HMD (head mounted display)' with 'A Head Mounted Display (HMD)'	Reword as suggested	
AU 030		05.03	Table 2	ed	Should it just be ' smart phone' rather than 'phone sensor'?		
AU 031		05.03	Table 2	ed	HMD should already be defined so don't need to reiterate here		
AU 032	3	06.02	1	ed	Camera coordinate system should be defined in clause 3	Define camera coordinate system	
AU 033	2	06.02	6	ed	Mentions projective coordinate system, should match Fig 8 and para 6, which is 'projective coordinate system'	Reword as suggested	
AU 034		06.02	Fig 8	ge	Model coordinate system translated to the world coordinate system should be explained (as per para 5)	Rework as required	
AU 035	5	06.04		ed	LAE can be mapped into the spatial **representation**	Reword as suggested	
AU 036	2,4	07.02	4	ge	What is the target physical object data, and target object? Isn't mentioned in previous paragraph	Mention earlier what these are, or use common terminology like LAE raw data and LAE respectively to replace those terms	
AU 037		07.02	Table 5	ge	As above, look at 'recognized object' to 'recognized LAE action' or something similar		

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AU 038		07.02	Table 5	ed	Suggest 3nd column should be 'category'? Also table is not referenced in text		
AU 039		07.03	Table 6	ed	Table not referenced in text	Reference table	
AU 040	1	08.02	2	ed	'An LAE event' rather than an event of a LAE	Reword as suggested	
AU 041	6	08.02	3, Tables 7, 8	ed	LAE_ID (Table 7) and LAE_id (Table 8) should be consistent case. Also with event_id (Para 3) and Event_id (Table 8)	Consistent casing	
AU 042	3	08.02	4	ed	Missing word after 'spatial' should this be representation?		
AU 043	4, 2	10	2, 4	ed	'the only physical object sensed is the user' contradicts 'A LAE can handle a device for generating events'	Correct the contradiction / inconsistency	
AU 044		11		ed	Consider the term virtual actor and entity as the representation is not live	Consider changed terminology	
AU 045		11	2	te	If Virtual Reality is excluded from the definition of MAR, then I think this falls into the VR space.	Recommend deletion, or be more clear early on how this relates to the MAR definition defined in MAR-RM.	
US 046	Pg 32	12		te	There is good content regarding key performance parameters but metrics such as latency, augmentation, operating conditions, response time are hinted at vs being defined such that a conformant implementation could apply/measure in a manner consistent with the standards. The section seems to be more discussion and information vs technical content/approach.	Recommend, if possible, defining the key system performance considerations specifically applicable to the context of the standard (i.e., the LAE) and what metrics should be considered/measured. If possible, this could be described in the context of the reference model; e.g., the latency from the capturer to the recognizer or the latency from the capturer to the spatial mapper.	

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AU 047	3	12	1	ed	Consistent casing for 'Chroma-keying' / 'chroma-keying'	Make consistent	
US 048	Pg 32	13		te	Similar to System Performance, this section seems to be some general discussion regarding safety.	Recommend identifying and providing technical discussion related to safety if/as it applies to implementation in accordance with this standard.	
US 049	Pg 33	14		te	Given that the reference model defined within Section 4 is somewhat generic, it is unclear what is truly required by this conformance clause. For example, one aspect of conformance states, "The movement of a LAE in a LAE-MAR system shall be mapped, and moved naturally within a MAR world according to LAE spatial mapper as specified in Section 6". It is unclear if there is enough technical specificity with section 6 to know how to make this determination. Another clause states, "The API for a LAE-MAR implementation shall conform to the concepts specified in this standard in order to ensure compatibility and software interface interoperability between LAE-MAR implementations can be accomplished at least at the abstract API level." It is unclear how software interface compatibility could be achieved based on the information provided in sections 5 through 10.	Recommend assessing the conformance clause to determine what is or is not achievable. In cases where the conformance is desired as specified but there is not enough information provided within the standard, it is recommended that the technical content be added into the normative technical sections.	
AU 050		A2		ge	General comment, I assume this would be covered by VR standards, if so these should be cross referenced / checked to ensure common terminology	Check event mapping / gestures match what's in VR standards.	
AU 051		A2	2	ed	Is this a heading?		
AU 052		A2	Fig 18. 27	ed	Should these be fig A.1, A.2 etc?		

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AU 053		A2	Table 10	ed	Should this be table A.1?		
US 054	Pg 40	Bibliography		te	There are several references for which it is unclear if the reference was used or necessary. For example, it is not clear if Chroma Key is a required reference as the technology has been in the general market for many years (also, would recommend not using Wikipedia as a reference site). Another example is OpenCV in that while it was identified as the manner in which a tracker could be implemented, it was not formally cited as a reference.	Recommend reviewing the bibliography to determine if all citations are necessary or required and delete any citations that are not necessary. An example is the OpenCV reference. In section 4..2.2, that could be eliminated and it could be simply stated that the LAE Tracker could be implemented utilizing an image processing/computer vision library/software (if necessary). Would further recommend deleting the bibliography and citing any actual normative references in the normative reference section.	
US 055	Pg 31	Bibliography		te	The bibliography references ISO/IEC NP 19710, JPEG AR, 2014.	Recommend not referencing an NP.	
US 056		General		te	Somewhat related to the US comment on the Introduction, it is unclear specifically how this standard is to be applied/conformed to. Is the intent to provide a reference model for a system developer or is it to be used to support interoperability or ease of integration between systems or between devices and a system.	If the goal is to provide more than a reference model to be employed in LAE/MAR system design (e.g., interoperability or device integration), more technical/architectural information may be required for a user of the standard to specifically develop compliant/conformant technical solutions.	

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US 057	Pg 5	Introduction		te	The introduction indicates that that the standard establishes required modules, minimum functions, associated information content, and information models for a compliant MAR system. In addition, it is stated that the objectives provide for the management and control of an LAE within a MAR environment as well as provide for the integration/interaction of an LAE and an exchange format to transfer and store data between LAE and MAR applications. It is apparent that the standard does define a reference model and some examples of devices that could be accommodated by the functional design of the reference architecture. It is not clear that information models, interactions, control interfaces, or exchange formats are defined within the standard or that they are defined to the level of specificity to be able to verify conformance.	Given that the document is fairly complete with respect to the functional components of the architecture, it is recommended that the goals and objectives be reassessed and clearly stated (consistently throughout the document) to reinforce the purpose and intended usage of the standard.	
US 058		Throughout		ge	Throughout the standard, there are many first person references; e.g., "We assume…", "We assign…", "In our case, …".	Recommend that these sections be written from the perspective of the standard; e.g., "For the purposes of this standard…", "This standard defines three common primitive gestures of a human body…"	
US 059		Throughout		ge	Several images within the document are grainy or low resolution.	Recommend that images be replaced with enough resolution to ensure that information is conveyed.	

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