

**M1/07-0678**

Date: 21 December 2007

Results of M1 30 Day Letter Ballot M1/07-0634 - Project 1564-D: Revision to INCITS 378-2004 - Part 2 - Finger Minutiae Format for Data Interchange

		<u>YES</u>	<u>NO</u>	<u>ABSTAIN</u>	<u>NO RESPONSE</u>	<u>COMMENTS</u>
1	Artec Group				1	
2	ATMEL	1				
3	Authenti-Corp	1				
4	Authorizer Technologies Inc	1				
5	Aware, Inc.	1				
6	Bearing Point		1			1
7	Biocom	1				
8	Biometric Associates	1				
9	Biometric Foundation	1				
10	Bioscrypt, Inc.	1				
11	Booz Allen & Hamilton Inc				1	
12	Computer Sciences Corporation (CSC)	1				
13	Crossmatch Technologies	1				
14	Daon	1				
15	EDS	1				
16	Fujitsu Laboratories				1	
17	ID Technology Partners, Inc.	1				
18	International Biometric Group LLC	1				
19	L1 Identity Solutions	1				
20	Motorola Inc.	1				
21	National Biometrics Security Project (NBSP)	1				
22	NIST		1			1
23	Noblis				1	
24	OSS NOKALVA	1				
25	Precise Biometrics				1	
26	Purdue University	1				
27	Recognition Systems	1				
28	Retica Systems	1				
29	Underwriters Laboratories	1				
30	United States Army BTF			1		1
31	United States Dept. of Homeland Security		1			1
32	United States Dept. of State	1				
33	UPEK	1				
34	West Virginia University				1	
		24	3	1	6	4

Comments:

**Comment – BearingPoint**

The following comments were not addressed:

- . BTF10
- . DHS9
- . DHS10
- . DHS11 (same as BTF10)
- . DHS15 – the typo was fixed, but now the sentence is bold and centered like a header.

**Comment – DHS**

DHS was unable to complete a thorough review of the revised draft as the revised approved disposition of comments (M1/07-0539rev) noted in the Meeting Minutes for the 22nd Meeting of M1.3 (M1/07-0599) has not been posted to the M1 Document Register. Additionally, the degree of debate that occurred during the INCITS M1 Plenary prior to the closing of this Letter Ballot, which raised concerns that interagency partners have technical comments on the revised draft, leads DHS to determine the revised draft should not be forwarded to INCITS for public review.

**Comment in table – US dept of Army – BTF noted as “BTF#”, and NIST as “NIST#”**

BTF1	Entire document		Ed	Abbreviations such as PID, BIR are used in the text of the draft. A separate clause containing a list of abbreviations would be useful.	Add Clause 5 “Symbols and Abbreviated Terms”.	
BTF2	4.17		Ed	Sub-clause number and the term should be in “bold” typeface	Change the typeface to “bold”	
BTF3	Entire document	All figures	Ed	The figures throughout the draft would benefit if a legend is added to each figure, explaining at least the significant elements depicted on the figure	Add legend to the figures	

BTF4	5.4.1 and Figure 2		Te minor	<p>a) It is not clear how the angles are consistently measured from one sample of the fingerprint with another. Depending on the placement of the finger on the collection device, the friction ridges would be obtained with some variance in the angles. It is also unclear how the "H" in Figure 2 relates to angle measurements.</p> <p>b) It is not clear whether the angle is an arbitrary angle measured from H to the vertex of the bifurcation with angles measured from H to B1 and H to B2 or the angle measurement is from B1 to B2.</p>	Recommend depicting actual angle measurements on the Figure 2 for clarity and adding an explanation of how to measure the angle.	
BTF5	5.4.2 and Figures 3-6		Te minor	Same concerns as in BTF4	Recommend including the actual angle measurements in Figures 3 - 6 and all subsequent and adding and explanation on how to make the measurements.	
BTF6	6.6.4.3	Bulleted list	Te minor	References to figures need improvement	<p>a) Recommend adding "see Figure 21" to the first bullet (circular whorl)</p> <p>b) Recommend changing "see Figure 18" to read "see Figures 18 and 20" to the third bullet (loop)</p> <p>c) Recommend adding a figure that depicts compound patterns and referencing the figure in bullet four (compound)</p>	
BTF7	6.6.4.4		Te minor	The clause should be illustrated by a figure (or figures) similarly to 6.4.4.3, to improve clarity of the document	Recommend illustrating the measurements of the angles outlined in the bullets	
BTF8	5.4.2 and 5.4.3		Te major	There is a number of occurrences stating that line RH bisects the angle formed by two legs (RB1 and RB2). Is the word "bisects" being used correctly here? It is not clear from the corresponding figures how the line RH can bisect the legs RB1 and RB2. On the other hand it can be seen that the line RH can bisect the angle subtended by the legs RB1 and RB2. "Bisection" implies the division of a line segment or an angle into two equal parts. Is the statement intended to be this limiting? There is either an error in the text, or the figures, or the equations.	Correct the text (or the figures, or the equations). Possibly, add to the figures another line that bisects the angle in question and change the text accordingly.	
BTF9	5.4.2	Page 8	Ed	Incorrect references to Figures 34 and 45	Correct the references	
BTF10	6.1		Te minor	Is the notation 0x203 correct? The note that follows references notations of 0x0201 and 0x0202 which presumably have a different number of bits than 0x203.	Either correct to (possibly) 0x0203, or clarify why the 12-bit value is described as 16-bit value.	
BTF11	6.4.7		Te minor	Although the context of the paragraph implies that the number of finger views would be expressed as a binary integer, it is not stated as such.	Recommend stating the numeric format of the 1 byte field.	
BTF12	6.5.1.1		Te minor	Same as BTF 11 with regards to finger position "code"	See BTF 11	

BTF13	6.5.2.4		Te minor	Same as BTF 11 with regards to minutia quality	See BTF 11	
BTF14	6.6.3.3		Te minor	Same as BTF 11 with regards to table 6 all quantities	See BTF 11	
BTF15	6.6.4.3		Te minor	Same as BTF 11 with regards to table 8 all quantities	See BTF 11	
BTF16	6.5.1.4		Te minor	The first two sentences are ambiguous. "... the fourth byte" could be taken to mean the first of a five byte sequence starting at byte 4, or byte 7, the fourth byte of the five byte sequence.	Provide clarification.	
BTF17	6.5.2.4		Te major	<p>The BTF understands that one of the objectives of the 378-2004 revision is to improve interoperability of finger minutiae data between systems and algorithms. An important data element to achieve this is the Minutia Quality Score (Clause 6.5.2.4), which (like the Finger Quality Score) can be useful to the match algorithms. In this regards, the BTF has two comments:</p> <p>a) Although the score is defined as a single byte (0-255) where 0-100 is the quality score and 254=Quality Not Reported, 255=Quality Computation Failed, the meaning of the actual 0-100 score is not defined. No common assumptions, based on the specification as written, can be made about the quality of the minutiae with respect to the score. For example, one can't determine whether the score is degraded because of uncertainty in the X location, Y location or Minutia Angle, or a combination of factors.</p> <p>b) Unlike the Finger Quality Score, where the specification provides subfields to specify the Algorithm Supplier (Owner) and Specific Identity (ID) for the quality checker used to generate the score, no equivalent subfields are provided for Minutiae Quality Score.</p>	<p>To develop specific texts to be included in the 378-2004 revision, a call for contribution would be useful to address the concerns expressed in BTF17.</p> <p>Perhaps, common guidelines for generating and using an interoperable Minutiae Quality Score may be developed and included in the 378-2004 revision to address BTF17 (a), or additional subfields can be added to specify a Quality Algorithm Supplier and Specific Identity to add more information to the Minutia Quality Score. This can be important for future match algorithms when evaluating minutiae quality scores produced by legacy scoring algorithms and may address the BTF17 (b).</p>	
NIST.0	4.10	Note 1	ed	Two periods at the end of note 1	delete both periods	
NIST.1	4.17	Section header	ed	Section header should be bold	change font to bold	
NIST.2	4.18	2 <sup>nd</sup> sentence	ed	Typo "... and <u>more than</u> one finger view may contain ..." more than is out of place	delete more than	
NIST.3	5.3.2, 5.3.3	Paragraph 1	ge	Some times "Ridge Ending" and "Ridge Bifurcation" are capitalised, and some times not. Same comment applies to other examples throughout the document.	Use consistent capitalization, preferably lower case.	

NIST.4	5.4.2	List	ed	typo - reference to figures (2) Figure 34 (3) Figure 45	change to (2) Figure 4 (3) Figure 5	
NIST.5	5.4.2, 5.4.3	Figures 3-6, Figures 9-12	ed	The use of color in the figures may not be appropriate for reproduction.	Use dashed lines, or some other line form to discriminate skeletons from axis.	
NIST.6	6.4.3	Paragraph 1	te	Valid record lengths minimum value is incorrect.	Change '28' to '20'.	
NIST.7	6.4.4.1	Paragraph 2	te	The second field of the CBEFF PID is referred to as the 'Format Type' in this section. However, in section 6.4.4.3, the field is referred to as the 'Version Identifier'.	Clearly state, in section 6.4.4.3, that the Version Identifier acts as the CBEFF Format Type.	
NIST.8	6.4.4.3	Heading	ed	To be consistent capitalize identifier	change identifier to Identifier	
NIST.9	6.4.4.3	Paragraph 3	ed	The next set of fields describe the capture equipment, not the encoder.	Change sentence to "Two two-byte fields shall be present to identify the capture equipment.	
NIST.10	6.4.8	Table 1	te	Length of Record is incorrect.	Change Length of Record to 20.	
NIST.11	6.4.8	Table 1 – last three rows	ed	Wrong reference Correct reference is 6.6.2.1 not 6.6.1.1	Change 6.6.1.1 to 6.6.2.1	
NIST.12	6.5.1.2	Paragraph 1	ed	Clarity in field name usage.	Change 'location' to 'position' in sentence 3.	
NIST.13	6.5.1.3	Paragraph 1	ed	Use of plural 'images' is misleading. Each finger view represents data acquired from a single image.	Change 'images' to 'image'.	
NIST.14	6.5.1.4	Paragraph 1	ed	Clarity. The quality score is in the fourth byte of the header, not the fourth byte of the five-byte set.	"The quality score shall occupy the fourth byte of the finger view header", or alternatively, "The quality score shall occupy the first byte of this set."	
NIST.15	6.5.1.4	Paragraph 2	ed	Undefined reference.	Change undefined reference to "Clause 6.4.4".	
NIST.16	6.6.3.4	Figure	ed	Consistency Reference Clause for ridge count is 6.6.3.2, but in Table 6 clause 6.6.3 is referenced.	Make Table 6 and the figure consistent.	
NIST.17	6.6.4	Paragraph 2	te	Contradictory information on the minimum number of cores allowed. 6.6.4 states 1, 6.6.4.2 states 0.	Change "legal values are 1 or greater" to "legal values are 0 or greater", or change Section 6.6.4.2 and Table 8 to state a minimum of 1 core.	
NIST.18	A.1	Figure	te	Record header length is incorrect	Below 'Record Header', change '28' to '20'.	
NIST.19	B.1	Paragraph 6	te	Record length formula is incorrect; the record header is 20 bytes, each finger header is 17 bytes, and the private area for the 2 <sup>nd</sup> finger should be 11 bytes. Note that the record length is 363, not 362, due to extended data area for 2 <sup>nd</sup> finger is 11, not 10, due to inclusion of ridge count extraction method code.	Record length = 363 = 20 (record header) + 2*17 (finger headers) + 27*6 (minutiae for 1 <sup>st</sup> finger) + 2 (null private area for 1 <sup>st</sup> finger) + 22*6 (minutiae for 2 <sup>nd</sup> finger) + 2 (extended data length for 2 <sup>nd</sup> finger) + 11 (private area for 2 <sup>nd</sup> finger)	
NIST.20	B.2	Figure	te	Record length needs changed to match B.1	Record length should be 0x0000016B	

NIST.21	B.2	Figure	te	Image size and resolution need moved into the finger view records.	Move X image size, Y image size, X resolution, Y resolution fields to follow the Quality Algorithm ID field in the first finger view header. Copy this same information into the second finger view header.	
NIST.22	B.2	Figure	te	Extended data area needs to include the ridge count extraction method.	For the second finger view record: Change Extended Area Block Length to 0x000B; change Extended Data Length to 0x000B; change Extended Data to 0x01121403151301.	
NIST.23	B.3	Paragraph 1	te	Change example data record to match changes in B.2	Change record header to 0x464D5200303330000000016B0042001100B50200	
NIST.24	B.3	Paragraph 7	te	Change example data record to match changes in B.2	Change 2 <sup>nd</sup> Private Data Area to 0x000B0001000B01121403151301	