

**IEEE 1451.4 Standard Working Group
Telephone Meetings, January 03, 06 & 09, 2003
Meeting Minutes, issued Jan 10, 2003, approved Aug 7, 2003**

Chair: T. Licht

Secretary : P. Hufnagel

Attendance:

Mike Dillon, Modal Shop, Mdillon@modalshop.com

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The current Draft is 1451.4/0.994, Jan 09, 2003.

1) Cover, Contents and Introduction:

- a) All corrections complete.

2) Clauses 1, 2 and 3:

- a) All corrections complete.

3) Clause 4:

- a) Fig. 1: Discussion on the wording in the NCAP block. Does the T-Block reside within the NCAP? This Figure is basic to the entire document and must clearly show all of the functions. Following an extended discussion, a motion and second were heard to delete the reference to NCAP from the Figure, since the thrust of 1451.4 is not networking, as it is in the other 1451 Standards. The dotted network connection will remain, and a mention of a network connection will be placed in the paragraph following Figure 1. **On the vote to remove NCAP reference from Fig 1: nays, 2; balance, aye. Motion to remove NCAP from Fig 1 is carried. Action: T. Licht will edit the Figure and place a statement in the following paragraph, allowing for network connection with a 1451.4-adapted NCAP.**

4) Clause 5:

- a) 5.4: A reference to Annex G has been added, and the administration of the unique registration number assigned to Maxim/Dallas. Dallas Semiconductor has submitted an address for applications for blocks of registration numbers. A suggestion was heard to place the address in one of the Annexes, and refer the reader of the Clause to the Annex. **Action: K. Lee has queried IEEE on the propriety of placing the name of the company in the Standard, but has not had a reply, to date.**

5) Clause 6:

- a) Figure 6.5: A modification is suggested to allow multiple template access, for the case of a TEDS which changes content dynamically, during use. One instance might be interchanging mic cartridges on a fixed preamp. The new mic must be discovered and the TEDS data read anew. A suggested approach is to add a bit to the selector of

descriptor, but there may be other approaches not requiring this change. This may be one case of hot swapping. **Action: Ideas solicited from the Working Group.**

6) Clause 7:

- a) 7.1.6: Add clause on character strings. **Action: T. Licht.**
- b) 7.2.5: Does the validation keycode work? The algorithm appears to be correct. **Action: T. Licht and G. Foote to supply an example. The example cannot occupy a lone sub-clause, according to the Style Manual, but must be integrated into the clause above.**
- c) 7.3.4: Add new definition for <name>. **Action: T. Licht.**
- d) Table 9: Reference for Unicode is given in 7.4.5.2.5. Should all such references be in one clause, or in the bibliography. Action: T. Licht to consult the Style Manual, or IEEE Std 1451.2, for suggested treatment of references to existing Standards. C. Jones to locate a reference for Unicode. **Done. UNICODE is defined in, and a subset of, ISO/IEC 10646, which is quite broad in its definitions and perhaps too complex for 1451.4. Unicode is defined and maintained within the guidelines of IEC 10646 by a consortium within the computer industry. For ballot, the reference will reference ISO/IEC 10646. Other clauses may also need the reference to Unicode.**
- e) 7.4.1: Add a cross reference to clause 7.4.8 in the description of <value>. **Action: T. Licht.**
- f) 7.4.5.3.3: Syntax corrections suggested by C. Jones.
- g) 7.4.5.3.5: Syntax corrections suggested by C. Jones
- h) 7.4.6.1: Syntax corrections suggested by C. Jones
- i) 7.4.8: Re-write for clarity and cross reference to clause 7.4.1. **Action: T. Licht.**
- j) 7.4.9.2: Two properties added, to describe change os sensitivity with frequency change, and , %Sens@Ref[0b01] and %Sens@Ref[0b10].
- k) 7.4.10.1: Some instances of "%MDEF_include" contain an underscore and others don't. **Action: T. Licht to search and make sure all are consistent.**

7) Clause 8:

- a) 8.3.1: The statement "1451.4 Class 1 transducer shall operate in the digital mode" had been highlighted, possibly due to an earlier question. With no suggestions for changes to the statement, the highlighting was removed and the statement stands.
- b) 8.5.1.3: Question on 3rd paragraph, relative to the Read Time Slot," When 15 microseconds has elapsed from the rising edge of the read pulse..." **Action: D. Smiczek will determine the proper timing for the read time slot.**

8) Clause 9:

- a) All instances of "TOM" must be replaced with "TBOM". Action: C. Lopez. **Done.**
- b) 9.: Normative wording added to TransducerBlock residence within the NCAP. Definition of "host" to be added in the text. Action: C. Lopez. **Done.**
- c) 9.: NCAP should be preceded with the article "an", rather than "a".
- d) 9.: Punctuation on lists must follow the Style Manual. Action: T. Licht. **Done.**
- e) 9.: Remove "Section" from all references to clauses. Action: T. Licht. **Done.**
- f) Figures: Render all color UML diagrams in B&W. Action: T. Licht. **Done.**
- g) Figure 2: Relationship between R4 and R5 numbering changed to 0..255 and the "MMI" block has been changed to "TransducerInterface".
- h) 9.1.3: Term "CTEDS" must be either defined or replaced with "TEDS". Action: C. Lopez to clarify meaning of "CTEDS". **Replaced with BTEDS = binary TEDS.**
- i) A schema has been added but should, according to consensus be moved into an Annex. Company and personal names must be removed, and a title and plain text explanatory paragraph added. Typeface must be IEEE style mandated Courier. The schema needs a namespace added. Suggestion is "IEEE1451_dot4_namespace". Action: C. Lopez. **Done.**
- j) **Action: Members should try to run the schema.**

- k) 9.1.3: "TEDS Services" needs to be listed as a definition. Action: C. Lopez to supply definition to T. Licht. **Done.**
- l) 9.1.4: Table 21; R13, R14 and R15 are marked reserved and highlighted. **Highlighting removed.**
- m) Tables, All: Table captions need to be above the tables and line weights need to be consistent. Some table lines are grey. **Action: At installation, T. Licht will edit the tables. Tables 21, 22, 27, 31 and 32 still have no lines.**
- n) All figures in the clause contain "class diagrams". References made to the figures, within the paragraphs, should state "class diagram". Action: T. Licht to insert wording as proposed by C. Lopez. Suggested statement is, "...shall be restricted by the relationships defined in the Class Diagram, Figure X...". **Done.**
- o) Figure 4: Allowance must be made for more than one instance of IEEE1451_dot4MMXdcr in each TransducerInterface with one transducer channel. Action: C. Lopez will edit Figure 4 to allow 0-or-more instances of transducer channel in a transducer interface. **Relationships between R4 and R5 have been changed to "0..255" and "MMI" changed to "TransducerInterface".**
- p) 9.2.4: Also throughout the clause, replace fonts for all software expressions with the suggested font from the Style Manual. Also, "an MMI" and "MMXdcr", throughout the clause. Action: C. Lopez. **Done.**
- q) 9.2.4: Notes are not normative, per IEEE Style rules, and must be re-worded to informative wording. "Metadata" is not yet defined. Action: C. Lopez to supply a definition for "metadata", at the request of the hardware people. **Done.**
- r) 9.2.4: The entire Draft needs to be searched for "Dot4". **Done.**
- s) 9.2.4: Should "MMX_Property" be in Courier font? Action: C. Lopez. **Done.**
- t) 9.2.5: The listed items are not clear as to meaning, and "CTEDS" needs to be defined. The term is used to denote the raw binary string recovered from the TEDS, and might also be named BTEDS, for binary TEDS. Action: C. Lopez to explain the list and propose a term for the recovered binary TEDS data, which will be ratified by the Working Group. **Done.**
- u) 9.2.5: Should "CTEDS" be used? Action: C. Lopez. **Replaced with BTEDS.**
- v) 9.2.6: What is "xS:hexBinary"? This is the XML Schema hex binary file of the TEDS data, analogous to the CTEDS. Action: C. Lopez write a description of this file. **Done.**
- w) 9.2.8: Action: C. Lopez to add a short description to each of the Node types listed. **Done, Annex G.**
- x) 9.2.9: Figure 9 has been corrected to change "MMI" to "TransducerInterface," and some additional typo errors fixed.
- y) 9.2.9.1: Rules are given for mapping and grouping of PublicTransducers. A question is raised on the use of the Dallas DS2409 uLan Gateway, which allows a group of transducers to be enabled or disabled. A TransducerChannel definition must allow for refreshing when another branch appears on (or disappears from) the channel. The lack of a status bit makes it impossible to know the state of the channel. **Action: C. Lopez will place a note here, for later work.**
- z) 9.3: Remove all words bonded with slashes, such as "and/or."
- aa) Table 3: New caption added.
- bb) 9.3.1: References to figure will be changed to "...the Class Diagram contained in Figure x..." or similar words. Action: C. Lopez. **Done.**
- cc) 9.3.2: Figure 12: Center object should be "MMXdcr". Action: C. Lopez. **Done.**
- dd) 9.3.3: Remove the reference to a specific number of trigger sources and edit the list per Style Manual requirements. Add normative wording to definition of "GenerateTriggerEvent". Action: C. Lopez. **Done. Hot swap event added, also.**
- ee) Figure 15: The ">" is an artifact from Rhapsody and must be manually removed from the behavioral state diagram. Action: C. Lopez. **Done.**
- ff) 9.3.4: Fig 16 & 17 show the relationship R& incorrectly. Action: C. Lopez will correct.
- gg) Figure 17: R29 needs parentheses, "TriggerSource" must be substituted for "TriggerGenerator", "Unique Registration Number" for "UUID" and correction of R29 labels. Minor editing done on the definition of "triggering". Action: C. Lopez. **Done.**

- hh) 9.4: "Appended" replaces "virtual" TEDS. "WSDT" needs to be spelled out the first time, to avoid a definition. Table in 9.4 needs cross-ref and "CTEDS" needs to be changed. **Action: C. Lopez.**
- ii) 9.5: Classes need to use the Courier font. Action: C. Lopez. **Done.**
- jj) 9.5.1: Name contains no class or operation parameters. The enumeration table of operation definitions for IEEE1451.4 needs an introductory paragraph, captions, may be merged with the second table in the clause and should have a thorough review by the Working Group. Action: C. Lopez and entire Group. **Done.**
- kk) 9.5.2, 9.5.3 and 9.5.4: The enumeration tables in these clauses need an introductory paragraph for each, captions, also may be merged with the second tables in the clauses and should have a thorough review by the Working Group. Action: C. Lopez and entire Group. **Done.**
- ll) 9.5: An adapter, for which a schema may be prepared, forms the connection from 1451.1 to 1451.4, or a table may be used as an explanation. The number of parameters in 1451.1 would make a lengthy table. **Action: C. Lopez to suggest a schema, which will be normative. May be added later as a ballot comment.**
- mm) 9.6: TBOM schema is to be marked "normative" and placed in an annex. **Done, Annex L.**
- nn) 9.7: XML Schema is to be marked "normative" and placed in an annex. **Done, Annex G.**
- oo) 9.: "Public Transducer" needs a definition. Action: T. Licht will locate the definition in 1451.1. **Done.**
- pp) There are still highlighted items in Clause 9. Action: C. Lopez to resolve any questions. **Done.**
- qq) Figures 20, 21, 25, 26 and 29 still need to be edited. **Action: C. Lopez.**
- rr) Tables 21, 22, 26, 27 31 and 32 need lines. **Action: T. Licht.**
- ss) Some Tables and Figures still appear to "float". **Action: T. Licht.**

9) Annex A: Template Listing (D. Potter, G. Foote)

- a) The listing of Templates, in Annex A, may be condensed, by the use of select cases. Some arguments are not compatible when the templates are collapsed with select cases. Action: D. Potter will determine which arguments are affected, and propose a solution. **Done.**
- b) All Tables: Tables presently have black fill in the headings. **Action: T. Licht will remove fill from all table headers in the Draft.**
- c) All Template listings: "BeginCase" to be removed from all template listings. Changes received from both D. Potter and C. Jones need to be integrated into a single set of listings. **Action: T. Licht will integrate all inputs on the template listings.**
- d) Table A.2: A select case for extended functionality has been added and "%gain" removed since it seemed to duplicate "%Sens@Ref". Resolution parameters in the ID3 fields are still in question. Resolutions shown for Sens_@_Ref (0.15%), Ref_Freq (1.5%), Sens (0.01%), Q (3%) and Fhp (0.15%). The values seem reasonable. The accel template is now mapped as a linear function with constant min and max points included, for consistency with more recently written templates. These points are in the template only, not included in the TEDS, and use no TEDS data bits. Table A.2: Questions on **Action: Anyone with inputs on the templates forward proposals to T. Licht. T. Licht to confirm the validity of the resolution parameters.**
- e) Table A.9: ID = 33. Only "Full Bridge" configurations are considered presently. ¼ and ½ bridges should be included, as should AC excitation. The title font is wrong. **Action: G. Foote and D. Potter will comment on the addition of more bridge configurations and E. Hecceg will propose the addition of AC excitation. T. Licht will change the title font.**
- f) Table A.11: ID = 35. Bridge sensors use either a gage factor and a single point calibration or a min/max two point calibration. One may imply the other, but they seldom coincide. There may be a need for an "offset" value to be added to the template. Some are of the opinion that the offset is included in the min calibration

value, others argue that the offset is the result of fixing the gage to the structure under test. Vishay has forwarded several comments on strain gages. A weak **Consensus: Add a %Offset definition. Action: D. Potter to add zero offset property and assess how many of the Vishay comments may be added at this time. If too extensive, they will be added later as a ballot comment.**

- g) Table A.12: ID = 36. Question on the need for min/max calibration points. The Type specifies the slope of the thermocouple, and calibration requires only a single point.
 - h) It is desirable to add a property for "Associated Template" possibly by using an include file as a mechanism for appending one template to another. The case of a preamp with interchangeable microphones makes this an advantage. **Action: T. Licht will propose a technique to append templates.**
 - i) The bridge template needs a select case for the shunt calibration resistor. The parameter is either a resistance value or the offset resulting from switching the resistor in and out.
 - j) A.2: The tables of template summaries need additional explanatory text, especially for the first and last columns. Action: D. Potter. **Done.**
 - k) A.3: "RTDCurve" template listings had the wrong exponent in several expressions, all corrected. Also Van Dusen is spelled wrong (Van Duesen) possibly due to an umlaut having been in the original spelling. **Action: D. Potter to check for all exponents and correct spelling.**
 - l) The tables need to have the titles moved outside, as captions, so that they can be cross-referenced. The units table will be moved to the end of the clause, as Table x. Action: D. Potter. **Done.**
 - m) Should the %Ref_Freq on the mic template be hard coded at 250Hz? **Action: T. Licht will check. Sometimes 1 kHz is used.**
 - n) Table 36: Thermocouple accidentally refers to "bridge sensor." Action: D. Potter to determine the correct content. **Done.**
 - o) There will not be a complete review of the templates, online. **Action: Those with particular interest in certain templates are urged to review those, and forward any comments to T. Licht.**
 - p)
- 10) Annex B: Template Properties (D. Potter, G. Foote)
- a) Annex B is a synopsis of all template properties in tabular format. Most properties are derived from Clause 7.
 - b) **Action: Independent review of Annexes A and B by Working Group members is earnestly solicited.**
 - c) B.2.1: Grouping properties have been added.
 - d) Schematics for bridge configurations and graphics of calibration curves have been added.
 - e) Typographical editing has been completed.
 - f) Description for "%User" added. Free form TEDS format allowing user to enter custom code.
- 11) Annex C: TDL Formal Grammar (**C. Jones**)
- a) Planned completion, 01-13-03.
 - b) A reference for LEX and YACC needs to be added.
 - c) C.1: Title corrected for capitalization, and some of the C++ expressions in the program code listings edited.
 - d) C.2: All of the templates have been tested successfully for adherence to the syntax rules in C.2.
- 12) Annex D: Sub Template File Checksum Example (T. Licht)
- 13) Annex E: Dallas Semiconductor DS2430 (P. Hufnagel)
- a) Complete.

- 14) Annex F: Dallas Semiconductor Family Codes (D. Smiczek)
 - a) Complete.
 - b) Suggestion to replace Fig 2 with XML Configuration files from Annex G. Due to the informative nature of Annex F, this is not a good idea.

- 15) Annex G: 1451.4 XML device description schema (C. Lopez)
 - c) **Action: T. Licht to edit title for font. C. Lopez to add introductory paragraph.**

- 16) Annex H: MicroLAN Communication (D. Smiczek)
 - a) Complete.

- 17) Annex I: IEEE Template Change Procedure (**K. Lee**)

- 18) Annex J: IEEE P1451.4 v0.9 Reference Data (**T. Licht**)

- 19) Annex K: Enumerated Listing of Manufacturer Codes (M. Dillon, K. Lee)
 - a) Complete.

- 20) Annex L: IEEE 1451.4 TBOM Schema (C. Lopez)
 - a) Complete.

- 21) Annex M: Bibliography (T. Licht)
 - a) Complete.

- 22) Annex N: Dot 1 Interface (C. Lopez)
 - a) Not included in this Draft, may be added at a later time.

- 23) Adoption of the Draft
 - a) Due to open work items remaining, a motion was made and seconded, to postpone the vote for adoption of the Draft for two weeks, but to forward the Draft in its present state to the IEEE Editorial Review Board, with the addition of changes discussed at today's meeting.
 - b) **On voting: unanimous decision to forward the Draft, including today's additions, for editorial review. Action: T. Licht to forward the Draft, by email, Monday, Jan 13, 2003.**

- 20) Next Meeting:
 - a) Maintenance of the Manufacturer List and Template Library:
 - 1) The IEEE Registration Authority administers only one unique number presently, which is a 24-bit UUID for networking. They cannot administer the 1451.4 materials, at this time, due to the amount of manpower required for not only dot 4 items, but also for those of hundreds of other groups.
 - 2) Both B&K and National Instruments have expressed interest in maintaining the 1451.4 website, manufacturer list and template library.
 - 3) It is possible to maintain a 1451.4 website on the IEEE site, which will allow dissemination of the materials.
 - 4) A procedure is necessary to obtain groups of Unique Registration Numbers from Dallas Semiconductor, who shall retain the administration of the numbers, for manufacturers wishing to make their own ASIC's. Clause 5.4 makes reference to this. D. Smiczek advises that applications for blocks of registration numbers may be made to the following address, and that the Dallas Semiconductor website will also contain an application form:
Maxim / Dallas Semiconductor
Attn: Director of Automatic Information
4401 S. Beltwood Parkway
Dallas, TX 75244-3292 USA

- 5) **Action: T. Licht to request a letter permitting the unrestricted use of Dallas products by anyone implementing 1451.4 systems.**
- b) The Ballot Committee will be open to the IEEE Aerospace Association and Instrumentation and Measurement Society, as well as Working Group members, for a total of about 30 balloters. **Action: K. Lee will send a petition to the IEEE-SA, on Jan 2, 2003, to request the formation of a Ballot Committee for 1451.4. They request a copy of the Draft, to begin the 20-day Editorial Review cycle. This will be emailed on Jan 9, following the vote to adopt the Draft.**
 - c) Hewlett-Packard patent: The Working Group received a letter from the H-P legal department, allowing implementers of the 1451.4 Standard to license H-P patents. This letter is believed to be in the possession of S. Chen, but may need to be renewed, with the separation of Agilent Technologies from Hewlett-Packard. **Action: K. Lee has asked whether the letter is still with S. Chen. No reply, to date.**
 - d) **Meetings will continue at 3:00pm EST, Tuesdays and 2:00pm EST, Thursdays**, to allow final polishing of the Draft and completion of the Annexes, following the presentation of the Draft to the Editorial Review Board.
 - e) Next Meeting: Thursday, Jan 9, 2003 Telcon. Time: 2:00pm EST.
 - f) Adjourn: 3:26 pm EST, Jan 3, 2003.
 - g) Adjourn: 3:56 pm EST, Jan 7, 2003.
 - h) Adjourn: 4:08 pm EST, Jan 9, 2003.