

**IEEE 1451.4 Standard Working Group  
Telephone Meetings, December 17, 19 & 20, 2002  
Meeting Minutes, issued Dec 23, 2002 , approved Aug 1, 2003**

Chair: T. Licht

Secretary : P. Hufnagel

Attendance:

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1) Cover, Contents and Introduction:

- a) All corrections complete.

2) Clauses 1, 2 and 3:

- a) Which references are included in Clause 2? **Action: All Members will suggest references to be included in the Draft.** Results of T. Licht check of the Style Manual: References may be listed in 2. References if they are normative. Informative references may be listed in a Bibliography.
- b) 3.1.12: Discussion of Hot Swap will be included in Clause 9. **Action: J. Zemel will discuss with C. Lopez.**
- c) 3.1.31: Wording on definition of "transducer" in question. **Action: S. Webb to make a proposal for wording.**
- d) 3.1.33: Question on the definition of "transducer interface". **Action: J. Zemel to propose a definition.**
- e) **C. Jones text search for all abbreviations. Done. Results:**
  - 1) "MFR" appears only in Fig. 4. Action: P. Hufnagel will remove the abbreviation. **Done. Fig 4 sent to T. Licht, 12-18-02.**
  - 2) "MFG" appears only in Fig. 2. **Action: T. Licht remove the abbreviation.**
  - 3) "CTEDS" will be eliminated in favor of "TEDS". **Action: T. Licht.**
  - 4) **Is there a need for a listing of acronyms?**
  - 5) ASCII will be listed as a Reference, in 2. ANSI Std X3.4-1986. **Action: T. Licht.**
  - 6) CORBA and COM will contain references in 9.1.2. **Action: C. Lopez.**
  - 7) "RAM" appears in 8.5 only, and will be replaced with "random access memory". **Action: T. Licht.**
  - 8) "A/D" and "D/A" (or ADC and DAC, depending on IEEE preference) will be added to the definitions. **Action: T. Licht.**
  - 9) "MMX" has been scrubbed from 9.1.2.
  - 10) Definitions will be added for "AC" and "DC". **Action: T. Licht.**
  - 11) MicroLan acronyms which appear in 5, 8 and Annex E are Dallas property, and will not be defined. **Consensus, we will wait until IEEE editors tell us otherwise.**
  - 12) Transducer Interface, shown in Fig. 4 as the lowest level of the T-Block, was renamed as MMI, which is somewhat confusing, since the hardware function is

*the MMI. Action: C. Lopez will rename the software function as “Transducer Interface.”*

13) *“Application Register” and “Command Description File”, in 6.2, and “Data Interface”, in 5.6, have been made lower case to avoid need for definitions.*

14) *“Basic TEDS”, “Template” and “Template ID” will be defined. Action: T. Licht.*

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. **Action: D. Potter and G. Foote to edit Figure 1 for clarity, brevity and correctness.**

4) Clause 5:

- a) Check spelling of “Family Codes” and change “Sub-templates” to “Templates”. **Action: T. Licht.**

5) Clause 6:

- a) 6.2: Grammatical changes for clarity. “Family Code” to be listed in definitions. **Action: T. Licht.**
- b) 6.4: Sentence structure and add missing Figure number. **Action: T. Licht.**

6) Clause 7:

- a) 7.2.1: All references to “sub-template” will be replaced by “template”. **Action: T. Licht.**
- b) 7.2.3: 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) **7.2.5.1: Have all the IEEE templates been grouped by UGID?**
- d) 7.4.1: Numerous references appear in the paragraph. **Action: T. Licht to check for correct references.**
- e) 7.4.1: All parameters in the <property tag> property are optional, except <property tag> and <data type>. This may result in missing comma delimiters in the template expression. **Action: C. Jones to search the templates.**
- f) 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.**
- g) **7.4.5.3.3: IEEE may have a preferred format for mathematical expressions.**
- h) 7.4.8: Hex coded data may be used in Optional Assignment. Binary and hexadecimal values will be prefixed with 0b and 0x, respectively. **Action: T. Licht to search document. One clause having a reference to hex numerals is 5.1.1.**
- i) 7.4.9: Sub-clause on Extended Functionality presently contains no mechanism to allow one property to be dependent upon another. This was formerly denoted by a “#” preceding the dependent variable. Example: changing the gain of an amplifier causes a change in the bandwidth. Rules need to be established for sub-property operation. The switch mask binary (7.4.9.2) needs to be more than a binary number, it should have a “0b” prefix. **Action: T. Licht and C. Lopez will advise C. Jones on required operation for extended functionality. Presentation on the requirements for Extended Functionality:**

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[http://www.1451dot4.com/presentations/121702/Extended\\_Functionality.ppt](http://www.1451dot4.com/presentations/121702/Extended_Functionality.ppt)

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- 1) Extended functions are important to the Standard and can be completed in a timely fashion.

- 2) Node hardware independence and extended functions are separate issues.
- 3) Extended functionality requires that: a) properties be properly grouped, according to any changes occurring due to an extended function operation and b) there be a node model associating properties of extended functionality with physical nodes in the MMXdcr.
- 4) Hardware independence requires there to be a model which associates XML device description files for the Dallas device with the abstract node model described in 3b, above.
- 5) Grouping is done according to rules of: a) sub-property cause-and-effect, (ex. Changing A results in changes to dependent properties B and C.), b) property-group orthogonality, prohibiting a property from being a member of more than one group (template) simultaneously and c) property-node orthogonality, prohibiting control of a given hardware node parameter by more than one property.
- 6) Slide 4 is a diagrammatic representation of relationships within and outside a node, stressing that each node has a well-defined model.
- 7) Slides 5 & 6 show the abstract node model association with physical hardware. Using these rules, the node may be a Dallas part, or a mimic of the Dallas function in a uP or ASIC (hardware independence).
- 8) Hardware independence enhances plug and play by allowing for the support of new hardware node devices, without system redesign.
- 9) Slide 8, the Abstract Node Model, illustrates the hardware independent connection of diverse nodes. The term BTEDS (binary TEDS) is substituted for CTEDS.
- 10) Grouping is complicated if: a) more than one MMXdcr appear in a node (Usually more than one node appears in an MMXdcr.) or b) one or more MMXdcr are allowed to spontaneously appear disappear from the MMI.
- 11) Some commands or properties may be needed to allow the connection of diverse hardware, which may or may not be an MMXdcr.
- 12) Some other Clauses are affected by Extended Functionality and Hardware Independence, determining whether only a limited number of parts may be used for 1451.4, or the selection is adaptable and unrestricted:
  - a) 5.1.2: **How is Basic TEDS mapped in memory not containing the Application Register, or in multiple nodes? Does the Template specify mapping?**
  - b) 5.6: In Fig 4, **how is the node list mapped, for multiple nodes and what rules define the mapping of data to the nodes?**  
Reply: Clause 5 describes the physical hardware necessary to store data, it makes no rules for what is stored, or in what format.
  - c) 7.4.9: The characteristics described for Extended Functionality and the operation of the Switch\_bin, 7.4.9.2, may be affected.
  - d) **Can Clauses 6, 7 and 8 supply the necessary rules for placing and retrieving data?** Reply: Clause 8 deals with the transmission of data and waveforms between two points.
- j) 7.4.9.1: In Table 25, should a Master sub-property be added, defining the independent switch, whose state results in the states of dependent switches?  
**Action: C. Lopez to advise C. Jones.**
- k) Table 25: Switch shall be present. Normative wording.
- l) Table 25: Description of SwitchType changed to a statement.
- m) 7.4.9.2: Do Switch\_bin's require leading 0's (placeholders)? **Reply, yes.**
- n) 7.4.9.2: An example of a filter dependent upon gain, using the Master sub-property, should be included. **Action:T. Licht.**
- o) 7.4.10.2.1.1: Extension for the TEDS file to be x.ted. **Action: T. Licht will search for other instances of TEDS file references, to be sure of consistency.**
- p) 7.4.10.2.2.1: Question on the need for a special template file name, in the case of appended TEDS. The original construct for same has been removed. Because the template is defined in the TEDS, whether local or appended, the need for a separate

file is questionable. **Action: G. Foote to make a proposal on file name construct, or give an opinion on the need.**

- q) 7.4.11: The NonCompactTEDS property allows TEDS to contain sections of ASCII coded data. Since the terms compact- and non-compact TEDS are no longer used this will be renamed, ASCII TEDS. **Action: TRL will edit the sub-clause.**
- r) Questions related to the Formal TDL Grammar:
  - a) Are hexadecimal numbers used anywhere in the TDL? **Reply, no.**
  - b) Binary numbers are used in the Switch\_Mask and Switch\_Value. May the binary prefix 0bxx be used? **Reply, yes.**
  - c) A suggestion has been made to eliminate BeginCase and BeginSelect. These commands appear in some of the Annex A templates. What is the disposition of these commands? **Action: D. Potter will determine this as quickly as possible, from G. Foote, and advise C. Jones.**
  - d) **Suggestion is made to adopt the Syntax Checker, in C, as part of Annex C. So moved.**
  - e) **BeginCase and BeginSelect are removed from the TDL.**

7) Clause 8:

- a) 8.1.1: Replace “digital data” with “digital TEDS data” throughout clause. **Action: T. Licht.**
- b) 8.2: Style Manual requirements on sub-clause numbering. **Action: T. Licht will check numbering.**
- c) 8.2.1: Reword 1<sup>st</sup> paragraph for clarity. **Action: T. Licht.**
- d) 8.5: References to the Logic Power Supply must be added as required. Sub-clause for the IEEE 1451.4 Logic Power Supply is 8.5.3. **Action: T. Licht.**
- e) 8.5.1.1: Indentation of note per Style Manual and subscripts in the signal names. **Action: T. Licht.**
- f) 8.5.1.3: Question on 3<sup>rd</sup> 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.**
- b) 9.: Normative wording added to TransducerBlock residence within the NCAP. Definition of “host” to be added in the text. **Action: C. Lopez.**
- 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.**
- e) 9.: Remove “Section” from all references to clauses. **Action: T. Licht.**
- f) Figures: Render all color UML diagrams in B&W. **Action: T. Licht. Done, exc. Fig 1.**
- 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”.**
- 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.**
- 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.**
- l) 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.**
- m) 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..."**.

- n) 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".
- o) 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.**
- p) 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.**
- q) 9.2.4: **The entire Draft needs to be searched for "Dot4".**
- r) 9.2.4: **Should "MMX\_Property" be in Courier font? Action: C. Lopez.**
- s) 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.**
- t) 9.2.5: Should "CTEDS" be used? **Action: C. Lopez.**
- u) 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.**
- v) 9.2.8: **Action: C. Lopez to add a short description to each of the Node types listed.**
- w) 9.2.9: Figure 9 has been corrected to change "MMI" to "TransducerInterface," and some additional typo errors fixed.
- x) 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.**
- y) 9.3: Remove all words bonded with slashes, such as "and/or."
- z) Table 3: New caption added.
- aa) 9.3.1: References to figure will be changed to "...the Class Diagram contained in Figure x..." or similar words. **Action: C. Lopez.**
- bb) 9.3.2: Figure 12: Center object should be "MMXdcr". Action: C. Lopez. **Done.**
- cc) 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.**
- dd) Figure 15: The ">" is an artifact from Rhapsody and must be manually removed from the behavioral state diagram. **Action: C. Lopez.**
- ee) 9.3.4: Fig 16 & 17 show the relationship R& incorrectly. Action: C. Lopez will correct.
- ff) 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.**
- gg) 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.**
- hh) 9.5: Classes need to use the Courier font. **Action: C. Lopez.**
- ii) 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.**
- jj) 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.**

**kk)** 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.**

**ll)** **9.6: TBOM schema is to be marked Normative and placed in an Annex.**

**mm)** 9.: "Public Transducer" needs a definition. **Action: T. Licht will locate the definition in 1451.1.**

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.
- b) Table 36: Add B&K Template listing, which has been condensed by using select cases.
- c) 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.**
- d) 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.
- e) A.2: The tables of template summaries need additional explanatory text, especially for the first and last columns. **Action: D. Potter**
- f) 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: T. Licht.**
- g) Table 36: Thermocouple accidentally refers to "bridge sensor." **Action: D. Potter to determine the correct content.**
- h) 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.**

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: Working Group review of Annexes A and B is earnestly solicited.**

11) Annex C: TDL Formal Grammar (**C. Jones**)

- a) Incumbent upon Clause 7.

12) Annex D: Sub Template File Checksum Example (T. Licht)

13) Annex E: Dallas Semiconductor DS2430 (P. Hufnagel)

14) Annex F: Dallas Semiconductor Family Codes (D. Smiczek)

15) Annex G: Transparent Protocol (D. Smiczek)

16) Annex H: IEEE Template Change Procedure (**K. Lee**)

17) Annex I: Transducer Block details (**C. Lopez**)

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

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

20) Next Meeting:

- a) New Business:
  - 1) At the Nov 26, 2002 Telcon meeting, the 1451.4 Working Group adopted a meeting schedule to review the Draft, prior to the end of December 2002. Part of the resolution (Minutes Nov 26, 2002, para 11c) provided for the last date of submission for changes to be Dec 9, after which the Draft would be frozen.
  - 2) Information proposed for sub-clause 7.4.9 was not submitted until Dec 16, and requires the resolution of the Working Group for adoption into the Draft. The concern is that the Draft will not be completed prior to the end of December, and may miss the deadline for ballot during 1Q 2003. Any proposed additions must be ready to drop into the Draft with little review.
  - 3) Also, some Annexes are not yet completed. The Working Group may need to move the vote for adoption of the Draft to 9 January 2003, if it is possible to do so. **Action: T. Licht to query K. Lee on last date, upon which the Draft may be submitted to IEEE.**
  - 4) **Motion, second and agreement, to adopt Jan 9, 2003, as the date for voting on adoption of the Draft, for IEEE ballot.**
- b) IEEE 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 require for not only dot 4 items, but also for those of hundreds of other groups.
  - 2) It is possible to maintain a website on the IEEE site, which will allow dissemination of the materials, but someone must be assigned to maintain the site, and administer the lists. Also, maintenance fees may not be possible on the IEEE website.
  - 3) It may be advantageous to form a consortium, or user's group, which can be tasked with maintaining a website, and through subscriber fees, fund the maintenance and administration of the templates and manufacturer codes.
  - 4) For the time being, Annex K will read " A group shall be formed to administer the issuance of manufacturer codes."
  - 5) Clause 5.1.1 must be corrected to read the same. **Action: T. Licht.**
  - 6) A procedure is necessary to obtain groups of Unique Registration Numbers from Dallas Semiconductor, for manufacturers wishing to make their own ASIC's. Clause 5.4 makes reference to this. **Action: T. Licht to edit.**
- c) **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.**
- d) Next Meeting: Thursday, Jan 2, 2003 Telcon. Time: 2:00pm EST.
- e) Adjourn: 3:55 pm EST, Dec 17, 2002.
- f) Adjourn: 3:51 pm EST, Dec 19, 2002.
- g) Adjourn: 4:14 pm EST, Dec 20, 2002.