IEEE 1451.4 Standard Working Group
Telephone Meeting, Nov. 2, 2000
Meeting Minutes, issued 11-02-00, Approved 08-23-01

Chair: Steven Chen
Secretary: Paul Hufnagel

Attendance:
Steven Chen, Aeptec, schen@aeptec.com
Mike Dillon, Modal Shop, mdillon@modalshop.com
Mike Dunbar, Crossbow, mdunbar@xbow.com
Paul Hufnagel, Kistler Instrument Corp, phufnagel@kistler.com
Charles Jones, Edwards AFB, Charles.Jones@edwards.af.mil
Kang Lee, NIST, Kang.Lee@nist.gov
Torben Licht, B&K, trlicht@bk.dk
Carlos Lopez-Reyna, Scitefair, clopez@ee.upenn.edu
John Mark, Kistler Instrument Corporation, jmark@kistler.com
Joe Que, Endevco, jque@endevco.com

1) T-Block: C. Lopez-Reyna
    a) Communication from CLR:
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1) Transducer interface Startup State

Based on Torben's comments it would seem that starting a multi-drop capable transducer in analog mode would be harmless (analog signals will just linearly add) if more than one transducer is in the line. Starting the transducers in analog mode also preserves compatibility with legacy systems. The key issue is that the transducer behavior is defined by the state of the transducer interface. If the transducer interface is of type 1451.4 then the T-Block will be able to switch to digital mode to further configure the independent transducers in a multi-drop configuration.

Active and passive modes only exist within the analog state. When in digital mode the transducer can be re-configured to be either active or passive and depending on the implementation it might be possible to read the state it's in. We could further specify that when a transducer is removed from the 1451.4 transducer interface it's analog sub state must be active (or the transducer must be reset to it's default state). The standard also mentions that legacy transducers and new 1451.4 transducers can't be mixed on a 1451.4 transducer interface (i.e. legacy system will short when the system attempts to read the TEDS because of negative polarity protection) eliminating the other source of potential conflict.

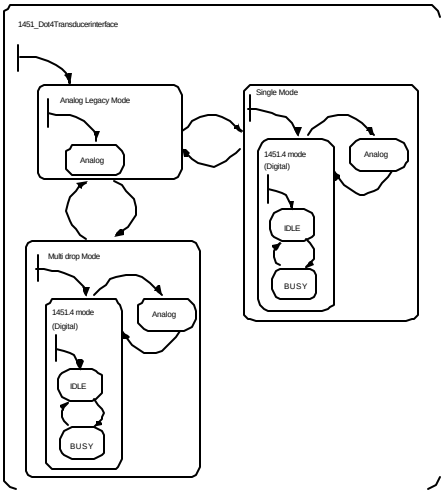

Figure 5:1451.4 Transducer interface

2) Hot swapping

The T-Block has a message handler to detect and notify that hot swapping has occurred. However no electronic implementation of the hot swap signaling has been described by the standard. Two methods have been recommended to detect a new transducer:

1) Using the fault signal on the transducer (Paul Hufnagel)
2) Periodic search of the transducer interface for new mix-mode transducers (Stan Woods)

Another way to detect hot swap would be to use the second wire on the extended two-wire interface (section 10.2 of the standard) as a hot swap signaling line.

No consensus has been reach by the group as to a standard method of detection.

3) T-Block node list vs. TEDS node list

The T-Block node list is extracted from the node list found in the TEDS. Next week the T-Block will address this issue in greater detail when the 1451_Dot4Node definition section is completed.

4) XML as the template language

The Extensible Markup Language (XML) can be a very powerful tool to exchange information. Possibly in a future revision of the standard it could become the de facto way to define TDL templates. However the key issue is the simple function the DL carries: To match the TEDS binary string to it's a corresponding label and data type in the template (semantic interpretation).

At the Copenhagen Face-to-Face we had an extensive discussion on the syntactic and semantic basis of the DL. While the syntax can be cumbersome the basic DL definition allows for third parties to implement their DL super set with improved syntax and extended grammar. In other words the DL grammar document can be used to formulate a DTD (Document Type Definition) in XML lingo as long as it ultimately compiles to DL for compatibility purposes between manufacturers.

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b) The material above is to answer questions on the T-Block chapter, which surfaced at the 10-26-00 meeting.
c) Starting states for the Transducer Interface should not be confused with those of the transducer.
d) Suggestion that the 1451.4 T-Block can be simplified by adopting a definition for the "1451.4 Interface", which must include a 1451.4 T-Block and a 1451.4 Transducer. If either element is absent (a legacy transducer is present, for instance), the definition for the 1451.4 Interface is not met, and the resulting state is not defined by the Standard. **Action: M. Dillon will write a proposal to add this concept to the T-Block definition.**
e) Suggestion that the possibility of a legacy transducer be acknowledged, simply to show that that state could exist.
f) No consensus has been reached on the sensing of hot-swaps. Three possible techniques are shown; periodic polling of TEDS, monitoring a fault signal, or adding a connection to detect a swap.
g) Suggestion that the method of detection be made optional, and only the handling of the "Hot-swap message" be defined in the T-Block.
h) T-Block Node-lists vs TEDS Node-lists: Every node will be listed on a node-list. A node-list creates an association between a node(s) and a transducer. Not every node will contain a TEDS, and may contain no more than one TEDS. A TEDS may contain a node-list, which refers to multiple nodes. A 1451.4 Transducer may have more than one node, and contains a node list and aTEDS. **Action: C. Lopez-Reyna will add these concepts to the T-Block definition.**
i) XML is a powerful language, which could be used to describe the 1451.4 DL, if an appropriate Document Type Definition (DTD) is developed. XML is not completed yet, but nothing would prohibit its use in the development of 1451.4 templates. The 1451.4 DL, although it is not all encompassing, contains a very solid syntax, and should not be replaced by XML. The DL will be an integral part of the 1451.4 Standard.

2) Next Face-to-Face meeting:
a) Consensus reached on holding the FTF meeting at NIST, Nov. 29, 30 and Dec. 1, 2000. No objections forwarded to K. Lee, by Oct. 30, 2000.
b**) Action: K. Lee to forward a list of hotels to Working Group.**
c) **Action: S. Chen, T. Licht and K. Lee will plan an agenda, to be forwarded to IEEE.**
d) M. Dunbar will present new connector definitions at the FTF. The T-Block definition should be complete soon after the FTF. The completion of a Draft by year end seems reasonable.

3) New Business:
a) Articles on 1451.4 are being sought by ISA Intech Magazine. Forward to K. Lee, ASAP, deadline is already overdue for the Jan. 01 issue.
b) A discussion on cable capacitance must be scheduled, since some questions have come up. The subject is touched upon briefly in the electronics chapter of the Standard, based on guidelines given by Dallas Semiconductor, in their application literature, but it is not a rigorous treatment.
c) Airbus and another French company have asked for information on 1451.4 products. **Action: K. Lee will forward the request from the French Company.**

4) Next Telcon, 11-09-00: Adjourn: 12:06pm EST