IEEE 1149.1- 2012 JTAG Working Group Minutes

**Date – 06/26/2012**

**Attendees:** CJ Clark, Adam Cron , Adam Ley, Bill Bruce, Bill Eklow, Bill Tuthill, Brian Turmelle, Carl  Barnhart, Carol Pyron, Craig Stephan, Dave Dubberke, Dharma Konda,Francisco Russi, Heiko Ehrenberg, John Seibold Josh Ferry, Ken Parker, Peter Elias, Rich Cornejo, Roland Latvala, Wim Driessen,

**Missing with pre-excuse:** Roger Sowada,

**Missing:** Lee Whetsel, Matthias Kamm , Mike  Richetti, Neil Jacobson,  Ted Cleggett, Brian Erickson, Scott Wilkinson, Jason Chodora ,
Kent NG, Sankaran Menon, Ted Eaton, , Hugh Wallace, Jeff  Halnon,  John Braden,

**Agenda**:

1) Patent Slides and Rules of Etiquette
2) Use LiveMeeting "Raised Hand" to be recognized and take the floor
3) Motion to accept TMP_STATUS clauses for both instruction and TDR subject to revision of rule i) to break down into easier to read sentence.

>     i) When the *TMP_STATUS* instruction is selected, then:
>     1) if the TMP controller is in the *Persistence-Off* state, the operation of the test logic other than
>         the optional reset-selection register and its associated logic shown in Clause 17 shall have no
>         effect on the operation of the on-chip system logic or on the flow of signals between the
>         system pins and the on-chip system logic; and
>     2) if the TMP controller is in the *Persistence-On* state then the state of all signals driven from
>         system output pins shall be completely defined by the data held in the boundary-scan register.

4) Discussion on multi-bit register field  selection for SEGMUX.  Friday's meeting we discussed and reviewed that with a keyword addition (and perhaps a few rules) BSDL could support descriptions of IEEE 1500 WIRs.  Our selection is now 1 bit wide and selects between a SEGMENT present and not present.  A IEEE 1500 WIR has multiple bits in it and selects one TDR from many.   IEEE 1500 is already being inserted in many designs and it has no real language (STIL) which describes the TDRs and the mandatory WSP (Wrapper Serial Port) when driven by the TAP.    Even with BSDL we cannot describe this.   I presented the concept and proposal and Carl has an alternative afterwards.  Between the two it comes down to where do you want the values for selection,  in the selector field or on the SEGMUX.   Last week we voted to end any new features. One could argue that this adds a new feature and hence to implement IEEE 1500 in BSDL, we would need to vote to include it and override last week's vote.   Two new

keywords probably need to be added SEGEND and SegSelVal (or SEGMENTVAL).   Here's one example (note that any segments between a SEGSTART and SEGEND are just definitions and not in the TDI-TDO path until they are used as an instance.

```
REG_1500 (
    (CORE_WDR_Start IS SEGSTART Segment(SEG_WDR) ),
    (WBY_Start IS SEGSTART Segment(WBY_SEG) ),
      (WBY [1] NOPO),
    (WBY_End   IS SEGEND   Segment(WBY_SEG) ),
    (WBR_Start IS SEGSTART Segment(WBR_SEG) ),
      (WBR [10]),
    (WBR_End   IS SEGEND   Segment(WBR_SEG) ),
    (My_Start  IS SEGSTART Segment(My1500Seg) ),
      (My1500Reg [20}),
    (My_End    IS SEGEND   Segment(My1500Seg) ),
    (CORE_WDR_End   IS SEGEND   Segment(SEG_WDR) ),
   (SELWIR_FIELD [1] ResetVal(0b0) TAPReset
       SegSelVal(SEG_WIR (0b0), SEG_WDR (0b1)) ),
   (CORE_WIR_Start IS SEGSTART Segment(SEG_WIR) ),
     (WIR_FIELD [2] ResetVal(0b00) TAPReset

SegSelVal(WBY_SEG(0b1X),WBR_SEG(0b00),My1500Seg(0b01)) ),
    (CORE_WIR_End IS SEGMUX Segment(SEG_WIR) ),
```

5) Discussion of CONFORMANCE versus USE statements.  Are keywords for instructions in 2012 available for a USE 2012 BSDL but with a CONFORMANCE of 2001?     Here are potentially rules we need to add.

xxx) Where the value of <conformance identification> is **STD_1149_1_2001, STD_1149_1_1993 or STD_1149_1_1990**, the
    <instruction name> element of the <opcode description> shall not be **INIT_SETUP, INIT_SETUP_CLAMP,  TMP_STATUS,**
    **CLAMP_HOLD, CLAMP_RELEASE, IC_RESET, INIT_RUN or ECIDCODE.**

xxx) Where the value of <conformance identification> is **STD_1149_1_2001, STD_1149_1_1993 or STD_1149_1_1990**, the
    <instance and value> of a **REGISTER_ASSEMBLY** attribute  shall not be of a DOMCTRL, SEGSEL, SEGSTART or SEGMUX field.

xxx) Where the value of <conformance identification> is **STD_1149_1_2001, STD_1149_1_1993 or STD_1149_1_1990**, the
    <instance and value> of a **REGISTER_ASSEMBLY** attribute  shall not include a <domain assignment>.

xxx) Where the value of <conformance identification> is **STD_1149_1_2001, STD_1149_1_1993 or STD_1149_1_1990**, the
    <instruction> of a **SYSCLOCK_REQUIREMENTS** attribute  shall not include a **INIT_SETUP, INIT_SETUP_CLAMP, IC_RESET, INIT_RUN or ECIDCODE**

6) Motion to go to submit draft for balloting when editor is ready.   We need a few more reviews and incorporation of feedback given this past weekend.  I would think we would be ready to submit the draft for ballot within two weeks.  We can make minor tweaks/fixes to text during the balloting process as well which will be incorporated with balloters feedback.

**Meeting Called to order at 10:30am EST**

**Minutes**:
Review Patent Slide – Slide Presented to the Group.
        Solicited input from anybody who is aware of patents that might read on our standard.
        No Response
Review of Working Group Meeting Guidelines
        No Objections

Gary Fleeman, from Advent Test Corp Joined meeting as a 1500 expert

Agenda Item 3)
Tmp_Status Register discussion

Carl makes motion to accept TMP_STATUS clauses for both instruction and TDR
Brian T seconds motion

Yes
| Bill T. | Carol P. | Ken P. | Wim D. |
|---------|----------|--------|--------|
| Brian T. | Dave D. | Rich C | |
| Carl B. | Josh F. | Roland L. | |

No

Abstain
| Adam L. | Heiko E* |
|---------|----------|
| Bill B. | John S. |
| Francisco R. | Peter E. |

*was not present on call at time of vote.

Motion passes
10 yes/0 no/6 Abstain

Item 4)
Multibit register field selection for SegMux
This idea was proposed and shown an last Friday's meeting

Carol – would be supportive of documenting 1500 structures in BSDL.  It is a worthy goal even this late in the game.

Adam C – looks like some bits and binary patterns to show the segment

CJ – expanding SEGSELECT to a mutlibit field

Carl – multibit encoded select.

Adam C – can you have multiple selections for SEGSELECT

CJ – yes you can have multiple selections

Adam C – Generally would like it to work out but looks like 1687 and opening it to crazy selection measures.  Thinks it late in the game to be adding this.

Adam C – are we going to spec it into 1149.1

CJ – that is the question posed.

Ken – if we generalized the multiplexer, it appears it would support 1500. Do we go off of what we have today for SEGSELECT and later cycle back to the next version and fix this ?

> Fear if we cycle back in 2013 we would have something radically different.
> Would support the idea the examining the generalization and vet it right.
> If 1500 structures need to be described we should go all the way

Carl – in order to support 1500 the only addition that we need is the SEGMUX or SEGSELECT can describe a decoder in a multibit field.   Clear that the only thing we are missing is the ability to decode a multibit field to do the selection.   Just a matter of adding that decoder.

Bill B – is the nature of the motion to vote on explore this and go to ballot or to adopt this.

CJ – this is no motion on the agenda item. This is just a discussion.  We haven't come to a consensus on the form for the BSDL.  Right now we are just trying to understand if it is worth wild to explore this.

Bill B- if we are going to proceed, we need to be careful not to get into a mode where we are opening the door every week to add new solutions/options/

CJ –One idea is to leave SEGMUX,SEGSTART,SEGSEL as is. And use different key words (suchs as SegDef, SegEnd)  That might get rid of serial vs. parallel aspect.

CJ – Right now we just need to answer the question - do we continue the work on this? Is it important to us to explore?

CJ – if we support the 1500 architecture from the TAP and SOC you have access to the DRAM.

CJ – do we want to go through the trouble of supporting this?

Ken – if we are to go out with what we have today we would be slamming the door on support 1500 for some period of time and would delay the industry as a whole.  Spending a couple of weeks now is worth it.  Excited about JEDEC getting into DFT and would like to help that position

CJ – polls the group of any opposing viewpoints on exploring this idea?

No one spoke up

CJ – polls to the group to see if we need a motion to explore this idea

Bill B – we should move forward with a motion

Bill B – makes motion to spend the time to explore in lieu of going to ballot

Carol Seconds motion.

Adam L – Was going to suggest point of order that there should be a motion. But bill B took care of that .
CJ – this motion sets a side last week's vote
Carl – only for this topic
CJ – correct.  This topic only
Bill B – accepts Carl's friendly amendment
        Motion now - to set aside last week's vote and explore the topic of IEEE 1500 support and only this topic
Carol reaffirms her second

Yes

| Bill B. | Carl B. | Francisco R. | Ken P. | Roland L. |
|---|---|---|---|---|
| Bill T. | Carol P. | Heiko E. | Peter E. | Wim D. |
| Brian T. | Dave D. | John S. | Rich C. | |

No

Abstain
Adam L.        Josh Ferry*
*was not present on call at time of vote.

Motion passes.
14 yes/0 no /2Abstain

Carl – does 1500 look like something that JEDEC is going to accept?
Gary – very willing for JEDEC to accept.
Carl - if we can interface to the 1500 interface you would be able to integrate the DRAMS on a chip in to the 11491 chain
Gary – that is my belief that we would use 1149.1

Carl – this would reduce the interface to a straight TDR
CJ – agreed
CJ – requirements do not state what can be used to select WIR input.  That can come from a TDR
Gary – wants JEDEC to put in reference to IEEE.
Gary will keep this group up to date as to the advancements that JEDEC is making

Item #5)
CONFORMANCE vs. USE

Instructions in 2012 (i.e. TMP_STATUS) , do you allow a chip that calls out 2001 to use these new instructions or is it a syntax error
Bill B- the crutch comes down to what is implied by putting USE 2012 in.  you are implying that semantic and syntax rules  for rev B instructions.
CJ – key words for instructions are not in package file.  Key words come from somewhere in the ether.

Bill B – the ambiguity should be removed'
Ken – look at USE statement as identify which language you are using.
        Would like to see input spec be optional instead of mandatory.
CJ – input spec?
Ken – sounds like you are describing a corner case that can be disposed of?
        Maybe it is a "don't care".
 CJ – the place where we would want to add is register_fields and Registermnemonic.

Bill B- -going to have to change the linkage and make sure all the pins in the port section will have be accounted for. More work to do than just input spec.

CJ – example would be BC_6. You might need to put conformance of 2001 to have it allowed.
Carol – you can have a user package and call it different.
CJ – we need the rules. Are we onboard for not reusing key words that are in 2001?
Carol – agreed if we had an instruction and it was the same
CJ – if you have 2001 code you can't have things like ECID because those didn't exist in 2001 and defined in 2012.  Would have to have your own port to access it too.
Carl – if it conforms to the 2012 than I don't see why she can't use it.
        If it is part of the 2012 BSDL your 2012 needs to conform to something in the standard.
CJ – from a tool vendor state you have to reject these tokens.
Adam L – emphasizes the model we currently have – for better or worse the USE statement involves the semantic rules that will be processed for the BSDL
Conformance is the version of the rules the component conforms too.
Sees the work done along that module.
If you are going to upgrade to 2012 BSDL you have to respect the reserved names. Why wouldn't the 2001 component conform to 2012?
CJ – little reason to have a conformance 2001.. Should have rules in place to cover it. That is what we are attempting to do.
Bill B- only 2 ways to go. 2012 is the semantic syntax rules.  The Conformance dictates the rules and the library is the same thing using either package.
CJ – Adam L pointed out.  This is already in the standard from 1993-2001
Carl – would put in the text that 2001 conformance would also be 2012 conformant but if you need to do this it would have to be those rules.
CJ - agrees

CJ notes that item #6 is not expected to be discussed today

**Meeting adjourned: 12:00 pm EST**.

*Summary of Motions Voted on*
**2 Motions voted on**

1. to accept TMP_STATUS clauses for both instruction and TDR
   a. Motion Passes
2. to set aside last week's vote and explore the topic of IEEE 1500 support and only this topic
   a. Motion Passes

**Next Meeting**: 7/3/2012 10:30 AM EST

NOTES:

1149.1 working group website -  http://grouper.ieee.org/groups/1149/1/

To Join the meeting
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Meeting time: Tuesdays 10:30 AM (EST)   (Recurring)

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