IEEE 1149.1- 2012 JTAG Working Group Minutes

Date – 11/15/2011

Attendees: CJ Clark, Bill Tuthill, Brian Turmelle, Adam Ley, Adam Cron, Carl Barnhart, Craig Stephan, Dave Dubberke, John Seibold, Ken Parker, Wim Driessen, Dharma Konda, Josh Ferry, Carol Pyron, Francisco Russi, Sankaran Menon,

Missing with pre-excuse Heiko Ehrenberg, Roger Sowada, Ted Eaton,

Missing: Lee Whetsel, Neil Jacobson, Mike Richetti, Ted Cleggett, Matthias Kamm , Peter Elias, Bill Bruce, , Bill Eklow, Roland Latvala, , Jeff Halnon, John Braden, Brian Erickson,

Agenda:

1. Patent Slides and Rules of Etiquette

2. Brief review of figure for 9.4 discussion area (subject to change based on votes below)

3. Review of DOMAIN and DOMAINEXT keywords as proposed on Friday
    a. *Motion to accept DOMAIN and DOMAINEXT as new keywords for describing on-chip and external domains,*
        ■ *Editor to Present draft text for further approval.*
4. **There is some interest by WG members to support segmented b-s register without having SEGSEL bits in the boundary register.**
    a. Motion to accept SEGMENT value keyword and recommendation for segment control to be in INIT_DATA when present and when possible, Addition of SEGSTART to 1149.1-2012 package file,
        ■ *Editor to create draft text for further review/refinement.*
5. PDL Level 1

Meeting Called to order at 10:30am EST (new starting time)
Minutes:
Review Patent Slide – Reminder sent out over email.
        Solicited input from anybody who is aware of patents that might read on our standard.
        No responses.
Review of Working Group Meeting Guidelines

review of figure for 9.4

        Added gating logic for 1149.1 to control power input
        Ken : errors on C and U on cells (scan in and scan out need to be in right spots) would get cleaned up after vote
        CJ: yes.
        Figure will give big picture view
        Friday discussed DOMAIN and DOMAIN_EXT key words.

DOMAIN could specify the grouping of the domains.
Boundary Register can call out Domains.
Domain controls are in InitControl register
DOMAIN_EXT doesn't have domain control on it. It is getting power from external pin
Would like to discuss and vote to add key words
Carl: DOMAIN_EXT - do we want it to be a port ID?
CJ: it is just a string name. It is not a port.
Ken: does it have to be something on the Chip
CJ: don't' think so. It is just a string
Ken: what does it tell us
Carl: if you use the string in many places it tells us that it is used as the same unit.
Just tells you which ones are coupled together. So you know what domain control cell or multiple domain control cells are associated with which domain. What which SegSelects are associated with domain.
Ken: you were right with saying it was a portID. It is coming from the outside world.
Carl: didn't think of that. This may have some value.
CJ: be careful. It is going to be multiple pins and distributed .
Ken: if it was a port id it could be a range of pins or multiple pins
Carol: could it be a pin that requested an external controller?
A given port can be configured to run at different voltages. And when you request it to be powered up, we don't say which voltage to power to.
Carl: that would have to be the INIT_DATA setting for the voltage
Carol: could make a request how to be configured.
CJ: the voltages are going to be set by user defined fields in init data
We have 2 relationships between registers and pins. Do we want another way
Carol: no. Not really saying that.
Carl: we haven't he means to associate the DOMAIN_EXT string association to the pin
Ken : looking for a mechanism. Jeff's point was that if there is literally power on a pin wanted a way to have that documented. So it is a way to raise the flag to the test engineer and monitor if the supply is there.
Carol: likes domain and DOMAIN_EXT
John S: pin port name in the field is a good practice but may not need to require it. Chip doesn't really know enough of where things are coming from so we don't' need to get to deep into it. But knowing which pins need to be on for the domain to be functional is good.
CJ: agreed. Plus the other mechanism to associate to the pin exist
Wim: not in favor of it. Doesn't like the select cells in the TDR itself
CJ: this proposal is pushing domain control into the init data.
Adam C: this does put the domain request in the INIT_DATA. Do you want the SegSelect bit in there too?
Wim: yes. Wants a stable configuration loaded into the chip.

CJ: can describe and recommend but don't want to make the designer to do it this way. Need to not make a big design constraint.

CJ: have the SegSelect cell on agenda. To discuss hwo to use the same technique to put SegSect cell into the INIT_DATA as well

Carl showed the group his edits for Domain/DOMAIN_EXT

Carol: where did this text go?

Carl: it is BSDL register section b.8.20

CJ: any reason we used CTRL for domain select?

Ctrl: could use DomainSel. Had just picked CTRL

Motion: Direct Editor finalize Domain and Domain_EXT keywords.   Made by Carl

Carol Seconds

Call for discussion

CJ: should we use "_" in Domain_EXT?

Ken : thinks it helps.

Vote

Ken: finalize is a bit strong.

Francisco: would like to spell out EXT(ernal)

Bill T. – YES	Carol P.- YES	Dharma K. – YES	John S. – YES
Brian T. –YES	Craig S. – YES	Francisco R. – YES	Josh F. - YES
Carl B. – YES	Dave D. – YES	Jeff H. – YES	Ken P. YES
WIM D. – YES	Sankaran M. – YES		
Adam C. – ABSTAIN	Adam L. – ABSTAIN		

Motion passes.

14 yes. 2 abs

CJ: Over email we can tweak the keywords and text.

Segment

New register field SegStart (0 bits) to define a segment.

SegSelect is used to control the segment.

Ken: SegStart and SegMux are 0 bit entities. Can route my TDI around a segment. In this example we have 3 segments. All 3 can routed around. So could I have a 0 length at that point? Could we have a zero length register?

CJ: good point

Carl: already disallow that in the boundary. Need to check if the TDR has that rule

Rules need to require a nonzero length in any case.

CJ: where is the timing problem if you have Zero-length?

CJ: still a flop there?

Carl: no

Adam C: question is really do we need to have a register that is 2 bits wide required to be at least 1 bit wide when deselected

Carl: excludable segment?

Adam C: a TDR

Carl: when it is selected it is the only thing between the TDI and TDO. Yes it would have to be a minimum length of 1 for timing reasons. So if you have a 4 bit segment that is excludable you might have to be a scan only cell outside the segment so that it is one.   Carol: are we going to make that a rule

Carl: yes

CJ: easy problem to solve. But lets shift gears.

CJ: wim . is this going to satisfy what you are looking to do.

Wim: yes this can describe what I want.

Dharma: should the 1 bit be part of the TDR?

CJ: yes it should be part of the TDR. Don't want a mux to shift between a 1 bit segment and the other segment.

Ken: is this a something that is allowed or is that mandated that the control is in INIT_DATA

Carl: allowed

CJ: can't mandate it. Because of the extra difficulty that I would cause.

Carl: there is also a rule that for boundary segments , the boundary control and SegSelect need to be in the boundary register or in the INIT_DATA register.

Ken: seems like it belongs in the INIT_DATA. Not necessarily in the boundary register. What is to stop other controls be in the boundary register.

Carl: may not have init data and may still have to deal with power domains.

CJ: want designers to do this. We can direct them but don't want to force them because we may not get anything. Want to leave the flexibility so that we can get the functionality.

Adam C: not sure that crossing power domains is the big reason to put it once place or another.

Ken: whenever you introduce flexibility you are introducing complexity on the tools and how people use those tools. This could be unnecessary. That is why it is being questions. If it is just nice to do than why do it?

Carol: doesn't quite like that rule (of having control only in INIT_DATA)

CJ: scan path/ring linkers have the controls in line

Sankaran: good to have the flexibility.

Josh: Up to the FPGA people. ASIC – doesn't have a preference as long as we know what the control mechanism is.

Wim: extra complexity.

Josh: if you make it a rule and due to cost/time/performance and designers realize they can't meet the rule, they will make it non-compliant and won't have any control.

If it can be a recommendation and still acceptable if they can do something a little different that is where he would put his vote.

CJ: ic maker doesn't want to be Non-Compliant. So this helps them meet their goals.

CJ: the editor can add a note in the description as to why it would be good to be in the INIT_DATA.

Ken: INIT_DATA is programmed with INIT_SETUP instruction which is non-invasive. If I load the power of one override bit, does that override the domain's power or is that held off until an invasive instruction is loaded.

Carl: by the current the rules it would not take effect until you have an invasive instruction

Carol: that is a problem.

Carl: INIT_SETUP wouldn't be invasive. Would have to allow something things to take immediate effect. Will have to look at how that rule is written and add some notes around it.

Ken: when you get to INIT_RUN you might have to issue some clocks to get it in its state. May not be a combinatory state.

CJ: you would do it in preload

Ken: concerned that the 10 minutes we have talked about this is not enough time for questions to pop up

Motion: editor to move forward to allow SegSelect to be in a separate register using SEGSTART/SEGMUX to define the segment in another TDR. Motion made by Carl

Seconded by Josh.

Bill T. – YES	Carol P.- YES	Dharma K. – YES	John S. – YES
Brian T. –YES	Craig S. – YES	Francisco R. – YES	Josh F. - YES
Carl B. – YES	Dave D. – YES	Jeff H. – YES	Ken P. YES
WIM D. – YES	Sankaran M. – YES	Adam C. – Yes	
Adam L. – ABSTAIN			

Motion passes.
15 yes 1 abs

Ken: Bill E. will have some info on ID Code .

Carl: would like to request formation of a Tiger Team of people willing to spend some time on clause B.8.20. to make sure there are no holes or problems and make sure that we have everything covered. Normal casual review may not be sufficient.
CJ: Sure. Lets flesh out the new domain portion.
Carl: need to get the syntax into a real compiler and come up with examples to push through the effort.
Carol: put the request in an email
Carl: a formal tiger team takes more than making the group. Wanted to make the formal request.

CJ: Friday lets talk more about the SegSelect.

- **Meeting adjourned: 12:00** EST.
2 Motions Made
Motion1 : Direct Editor finalize Domain and Domain_EXT keywords.

Passed

Motion 2: editor to move forward to allow SegSelect to be in a separate register using SEGSTART/SEGMUX to define the segment in another TDR.

Passed

Next Meeting: 11/22/2011 11:00 AM EST

HomeWork Status

John has passed his examples in to the working group. CJ is running them through the parser.

Carol – is still working on examples

Heiko is still working on examples.

CJ is still working on port assignments

Homework assignments.

Heiko and Carol's assignments are outstanding and will be done for next week's meeting

CJ will have examples of port assignments

Bill E – work on more concrete example and definition of the ESSID register

NOTES:

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

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ppppp11491p*pp03820#

JOIN the meeting as GUEST – will have to ask to present

 Meeting time: Tuesdays 11:00 AM (EST)   (Recurring)

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