Date – 11/Nov/2011

Minutes of the IEEE-1149.1 Working Group Friday meeting

Attendees:
Adan Cron
Brian Turmelle
Francisco Russi
John Braden
John Seibold
Josh Ferry
Carl Barnhart
Carol Pyron
Craig Stephan
CJ Clark
Ken Parker
Roland Latvala
Heiko Ehrenberg
Dave Dubberke
Jeff Halnon
Peter Elias
Ted Eaton

Excused:
Roger Sowada

Meeting called to order at 8:30 am MST

Current Draft: P1149 1 Draft 20111001.pdf

Agenda:
Today's agenda of topics:
- Continued discussions on Power Domains and Register Segments

Minutes:

Carl displayed a figure of 4 groups of registers and register assembly example for discussion:

- Domain control cells (pwr1_ovrd pwr2_ovrd) moved to init-data reg using a named reference to them now.
- Segsel and segmux remain in the boundary reg
- For Carol's case where seg1 and seg3 are on same power domain that can be referenced accordingly.

- Power domain cells could be in either or both the init-data and boundary registers, but two power domain cells in the same register would need different names.
- Ken asked if domain cells should be parsed first or deferred.
- CJ and Carl confirmed semantics checks could look for this
- Ken's point was that the longer you have to wait before you can do those checks can make it harder to debug the issue. If INIT_DATA was parsed first that issue would go away for power domain cells.
- CJ felt it was a concern but not necessarily an issue we have to resolve.

Francisco asked if we could overlay the power controller and some isolation levels into the figure. Carl confirmed he could add the power controllers. CJ added that showing the level shifters wouldn't be necessary.

Francisco asked for at least the high level figure to include power domains since we are referencing IEEE 1801. We should encourage overlap.

CJ didn't feel we overlap with 1801 so maybe no need to reference it.

CJ and Francisco debated the need for referencing 1801. CJ will update his block diagram and they will discuss again later.

Francisco and Carl discussed the minimum length in the always on domain which is the segsel flop, so minimum is 1 flop.

Ken noted that Carl left the segsel, segmux, and domain control cell bits out of the figure. Carl acknowledged.

Francisco asked for more clarification of the boundary reg and segments.

Carol had some other comments on Carl's figure.

Jeff Helnon asked how we manage it when domain control is off chip externally Carl showed in the figure that the 'pwr1_ovrd' could be a keyword in that case that says 'external'. Or DOMAIN and DOMAIN_EXT.

CJ mentioned that ic vendors would have to document all this. Carol and Carl clarified that this is only an enable to the external power controller.

CJ asked for clarification about the definition of external controllers. Dc/dc convertors. Is the differentiation that the chip itself has a pin that talks to the external controller?

Jeff thought if the request has to go off chip, it is then external per Carl's definition.

Discussion of domains that go off chip, with control and those without control.
Carol summarized about domains that have no ovdd, and today require two bsdl files based on some id code difference that muxes around the powered off segments.

CJ said his concern was that Jeff may not get this domain_ext on all the register assembly that he is looking for. We already have power port association and pin association in case you don't get the domain_ext for every segment.

Jeff still wants proper structure for this register assembly construct. Carl acknowledged he will add the external keyword into the statement.

John (TI) discussed automatic voltage sensing/scaling with 8bits going to off chip pmu. Do we put boundary scan on these bits that go off chip? These are output pins.

Carl thinking on the fly, you can put something in BSDL that says this segment must be excluded based on some bit into the segsel from init-data or somewhere while in EXTEST.

Ken objected to this. If those 8bits are not part of EXTEST then the chip is lobotomized and not doing its normal function.

John still needs to know how to control those 8 bits. Carl reconfirmed that those 8bits can be selectively excluded or included for EXTEST or for controlling the power. The domain is power switchable and the control is off chip.

Carol agreed and asked for description of off chip controls that can affect EXTEST. Ken confirmed this is a classical board test engineer problem. Carl confirmed segsel gives him another tool to manage this.

Francisco asked about segment power and domain power interdependence.

Carl described the domain PO is a request to keep power on, and the acknowledge then comes back to the segsel. He needs to add a timing diagram of this handshake.

Ken asked for better figures.

Francisco asked about the figure boundary reg and init-data relative lengths inferred and port associations. Carl confirmed those are representative only and described in the draft already.

Carol asked that 3rd party ip be required to keep segsel segmux in 'always on' domains. Carl confirmed.

CJ said we would encourage the segsel and the segmux be in the 3rd party ip.

CJ showed another diagram about how the wrapper works. We are not changing the design of the power controller but for jtag control it will need a jtag wrapper added around it. Carl added that there are new rules now about the handshaking between the power controller and the domain control cell and segsel cells.

CJ will label the cells for this new diagram. Carol acknowledged that would be good.

CJ asked about a rule that non-excludable tdr bits have to be in an always powered domain when the TAP is powered on. Carl confirmed. CJ wants to make sure people get it right. Any non-excludable tdr bits need to remain powered when the TAP is powered. Carl will make sure the proper rules are there.

CJ asked if we want to allow segsel cells to be movable.
Ken asked what that means.
Carl described that segsel and segmux clearly define where a segment begins and ends. If you move the segsel then you have to infer starting and ending points. Carl likes to keep it explicit.

CJ showed possible option of naming the SEGMUX SEGMENT(seg1_cntrl) using named references also, rather than requiring the current positional reference prior to each segment.

Carl asked about a rule that the domain control cell and segsel bits be either in the boundary register or the init-data register, but no place else. CJ confirmed this sounds like a good option and adds some flexibility

The closing discussions were on positional vs. named references to segsel bits as well as domain control cell bits. That discussion will be deferred until later. For now Carl will add rules for domain control cell named references only. Carl heard from Ted via text, that he would vote against positional segsel bits. Further discussion on this next week.

Meeting adjourned: 10:03am MST

Action Items:
- Carl to revise draft rules for domain control cells.

Next Friday Meeting:
- Next week Friday Nov 18, 2011