4 April 2018 - notes on riscv.org compliance wg meetingn (many thanks to Somon for taking much better notes than I did!)

present:
Allen Baum
Stuart Hoad
Simon Davidmann
Greg Wright
Damon Tohidi
Ken Dockser
Niraj Sharma
Milan Skala
Dmitri avlov

Allen talked through Agenda slides

What is compliance

Q: Simon - is there definition of Linux platform profile
A: Allen - currently loosely documented/ defined.
There is a notion of a Unix platform, with the only platform requirement being Linux ABI, high half of physical addre space is reserved for kernel.

Existing work

Last Weeks discussions, decisions
Q: on formal models - can they cover all of specs?
A: (Stuart) - Nikhil says they are planning to support parameterised options. He has various model flavors from different contributors with different parameterised options. Compliance WG be will need to align with the formal group
AI: Allen will talk to Nikhil in Barcelona if possible
Q: (Simon): when will it be available ?
A: (Stuart): hope to have some ready for Barcelona
Q: When will profiles be defined?
A: Currently unknown. Also unknown is who is charged with defined them
Q: Will there be foundation approved profiles?
A: Currently unknown.

Discussion on Charter of Compliance WG

Q: do we create tests for the different arch versions (hopefully not)?
A: or the framework to show to run the tests (good answer)?
Q: who creates the tests for the base (unprivileged) ISA
A: probably in our charter...
Q: who writes other tests
A: we expect the extension working groups to develop theirs
(to our framework)

Charter is: develop framework for tests
develop method to select tests for arch choices
develop method to run the test and verify

looked at Compliance framework cartoon slide – not ready for a T-shirt yet

Future work for discussion slide

3 things must be in synch: spec, tests, golden model.
Priority#1 – develop the framework that everything else feed into.

- golden formal model - rely on haskell model
- need standard format for describing possible spec options
- need standard format for describing execution environment
- define test coverage (especially privilege level)
  - line coverage of golden model?
  - (necessary but not sufficient)
- where do tests source come from?
  - particular extension working groups will need to create
  - need revision control methodology on test suite & also specific targets of isa and priv specs
  -

  Q: should we work to isa/priv head or latest riscv.org approved spec?
  A: (Simon) whatever chosen needs to be in sync with isa/priv revs
  - should start with approved spec revision
  A: we should not release compliance test revision of unreleased architectural revisions
  - will also depend on release status of the golden model

- Note that specs, golden model, and compliance test must be kept in sync!

  Q: what is methodology to tell test frameworks what tests to run
  e.g. registers with optional bits to be implemented? how works?
  A: tests for optional speced feature need to handle the options
  - (can be complex with cross products of options...)

  Q: (Niraj) - who is responsible for maintaining the current conformance tests (base ISA)?
  A: we can leverage existing work, but will need refactoring for compliance framework

  Q: (Simon): why is there (now) a conformance suite and compliance suite?
  A: (Stuart): WG did look at the original conformance suite. It evolved into Codasip as they had tests and could donate them - but maybe that is stopped...
  A: idea: WG that develops a spec, needs to develop the tests. E.g. when Andrew adds to ISA spec, needs to adds to tests. Future work would need to move those tests compliance framework.
  - We need a way to ensure the formal model is kept in sync as well

  Q: (Simon): how will extensions groups develop tests on formal model?
  A: Stuart: formal group will enable extensions groups to add to formal model

  Q :(Allen to Simon): you have coverage in your tools and you said that the Codasip RV32I tests only cover 40% of the Imperas model - can you say what is not covered?
  A: (Simon): we are running the tests on our full model and so it is not surprising that the RV32I tests only touch 40% of the model. (the Imperas internal tests cover 100% of the Imperas model).

  Q: how are vector extensions going to be tested?
  AI: Allen will talk to Roger of extensions group...