# Technical Working Group

Agenda/Minutes: 28 Apr 2025

The Teams link for this meeting will be:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_ODIyNTM1YjMtNmI0Yi00MmU5LTk1ODYt
MzAyYjYwNjg1MzJi%40thread.v2/0?context=%7b%22Tid%22%3a%226e603289-5e46-4e26-ac7c-03
a85420a9a5%22%2c%22Oid%22%3a%22ff37ba72-0621-46b3-aff9-cf866855acc2%22%7d

## Register of attendance, introductions and apologies

We are recording attendance at meetings, so OpenHW can track membership in accordance with article 4 of the membership agreement. This matters particularly when email ballots are held, to ensure the voters represent member organizations who are active in the group. Please add your organization behind your name in Zoom.

**Apologies:**

- Mike Thompson (OpenHW Foundation)

**Attendees:**

- Jérôme Quévremont (Thales)
- Jonathan Woodruff - Capabilities Limited
- Fatima Saleem (10xEngineers)
- Manuel PEZZIN (CEA)
- Daniel Gracia Pérez (Thales)
- Robert Chu (Futurewei)
- Gordon Harling (CMC)
- Flo Wohlrab (OpenHW)

## Agenda

### Reports from task groups (10 min)
- Verification TG: Jean-Roch Coulon
  - Thales DIS is closing CV32A60X on TRL5, the first fully verified Core
- Cores TG: Jérôme Quévremont
  - The group met on 7 April. Detailed notes in https://mattermost.openhwgroup.org/all-users/channels/twg--cores
  - Manuel Pezzin (CEA) discussed the current fragmentation of the CV32E4 family.

- - Fatima Saleem (10xEngineers) presented a proposal for IOPMP development, also on today's agenda.
    - Dr. Lesley Shannon, Simon Fraser University presented the status of the CVA5 project.
    - Fatima Saleem (10xEngineers) volunteered to be a co-chair. There is a second position open. Stay tuned after the Technical Advisory Committee election.
  - Software TG:
    - (Co-)chair(s) needed to replace Paolo Savini
    - Currently not much work as majority is upstreamed and only small updates pending review from maintainers which is actively monitored.
  - Safety and Security TG: Jaume Abella
    - Daniel: Currently no update
  - Interconnect TG: Jonathan Balkind, César Fuguet
    - CV-TCCC: Identified refill coalescing as useful (using fewer entries in replay table), merged feature into HPDC. Continuing to work on the actual coherence features now
    - CV-Mesh: Performance debugging, memory consistency testing in progress. Implementation of multi-bank HPDC is "complete" but more testing needed in HPDC (see next). L2 sharer count is now parameterised with change in tile count
    - HPDC: Refill coalescing buffers added (as noted for CV-TCCC). HPDC user guide published. SystemC testbench and Github CI improved, the former needs some more features before multi-banking is merged. Initial progress on adopting HPDC into Vortex GPU
  - Hardware TG:
    - The Core-V-MCU project is processing, there have been good progress on simulation by USask, QuickLogic and CMC, we also get enhanced documentation contributed by Circuit Suitra.
    - Next step to get the physical routing we have to wait for more resources by CMC
    - Manuel ask for the wrapper of System Verilog for Spike if it is Open Source

## Ballot results (2 min)

Project Concept: CVA6-CHERI (Capabilities Limited, Zero-Day-Labs)

Project Concept: CV64A60AX (CEA)

Flo has to work on this before 1st May

## OpenHW Community Call (2 min)

An OpenHW Foundation Members Meetings was help on  14 Apr 2025 .

For those who were unable to attend, you may refer to the [Minutes](#) and the [Presentation Materials](#).

**Committee Election Announcement (2 min)**

Reminder:

Today ( 28 Apr 2025 ) is the deadline for Participants Members (10xEngineers, Alibaba Cloud, Bluespec, Inc, Capabilities Limited, Circuitsutra Technologies Pvt Ltd, Crypto Quantique Limited, Frontgrade Gaisler, Harvey Mudd College, I Machines, Inc, MU Electronics, PlanV GmbH, and Red Hat, Inc) to submit nominations to fill elected positions on OpenHW governing bodies:  the Steering Committee and the Technical Advisory Committee.

Details in the email sent by Sharon Corbett to openhw@eclipse.org on 16 Apr 2025 .

Notes:

The Technical Advisory Committee will replace TWG when it is operational.

Strategic Members (CEA, Thales as of today) will each have one appointed position in each committee.

**Mailing list (2 min)**

Sharon also encourages to join the OpenHW Foundation General Mailing List: [https://accounts.eclipse.org/mailing-list/openhw](https://accounts.eclipse.org/mailing-list/openhw)

**RISC-V Summit Europe OpenHW gathering (5 min)**

The RISC-V Summit Europe will gather in Paris 12-15 May 2025 (12: RISC-V Members' day; 13-15: core event).

Flo Wohlrab to update on a proposed in-person meeting on 16 May 2025 , the day after the Summit in Paris, in a nearby hotel. Flo is finalizing the agenda.

# Expanding OpenHW's Uncore IP Portfolio: A Proposal for IOPMP Development (15 min)

Presented by Fatima Saleem, 10x Engineers

The slides will be shared after the meeting (add link)

Overview:

- Input/Output Physical Memory Protection
- Manages and enforces access permission for devices accessing memory
- Three key structures: SRCMD table, MDCFG table, IOPMP entry array

- Complies with RISC-V IOPMP architecture v0.7 (Feb 2025)
- Verification architecture document is done. Test bench created
- Goals: achieve coverage closure (TRL 5) and integrate with CVA6/run OS in Q1 2026
- **Call for support:** This must become a funded project to ensure timely execution
- Why invest? IOPMP will be ratified by Q4 2025. Project would position OpenHW as the go-to source for RISC-V security IP

Discussion:

- Already significant effort was devoted by 10x. Need support and funding to progress further.
- According to Fatima, RISC-V International does not require a prototype to ratify the specification.
- Jérôme suggests Fatima to drop a specific message in Mattermost to advertise this initiative.

## Future meetings

Meetings are held at 07:00 Pacific Time on the fourth Monday of each month.  We will not hold a meeting in December.

Our next meeting will therefore be on  26 May 2025 . This will likely be the last TWG meeting before transitioning to the Technical Advisory Committee.  Agenda items to be sent to the Chair, Jérôme Quévremont, preferably before  7 May 2025 . You can also share on Mattermost: https://mattermost.openhwgroup.org/all-users/channels/twg--cores.

Planned items:

## AOB