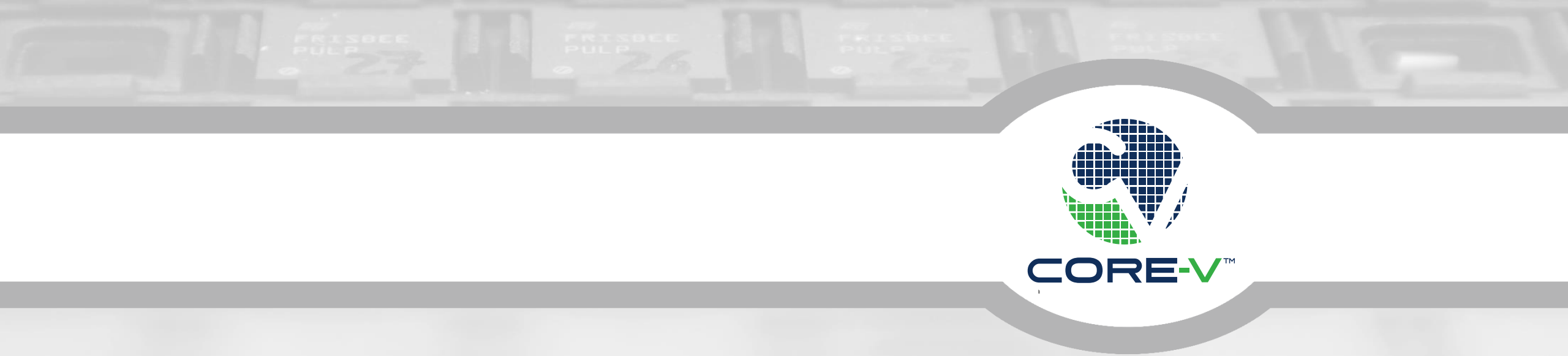


CORES TG – February 7 2022

Arjan Bink

Jérôme Quevremont

Davide Schiavone

Agenda

- CV32E40P (v2) status
- CV32E40X / CV32E40S status
- CVA6 status
- New project proposals / roadmapping

CV32E40Pv2 status

Pascal Gouédo

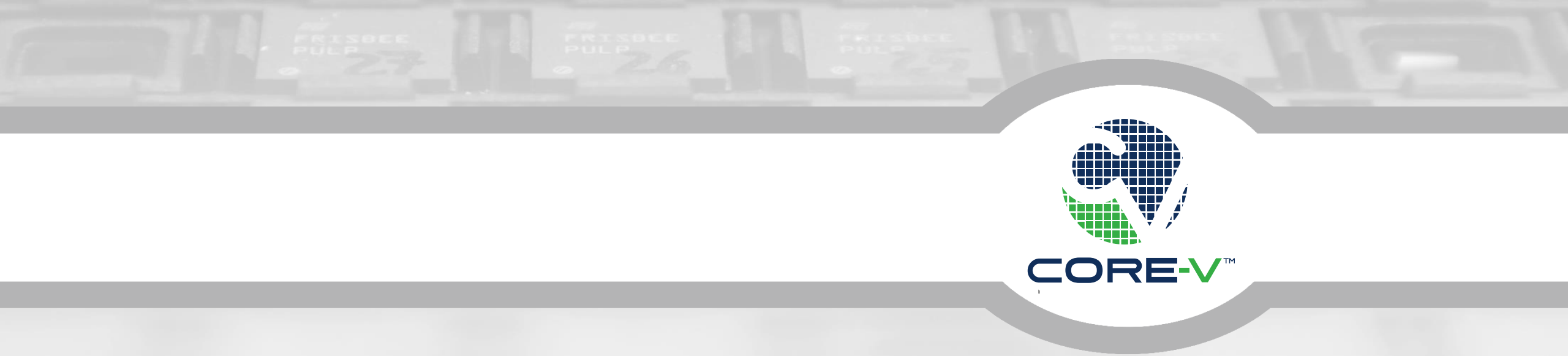
CV32E40Pv2: current activity

- Design
  - Started PULP re-encoding to evaluate complexity

- Verification
  - Imperas business contract finalized & PO signed
  - E40P core-v-verif test-bench
    - Evolution to either
      - a RVFI/RVVI (E40X like) test-bench or
      - an ImperasDV like test bench (RVVI API rather than RVVI SV interface)

    ⇨ Actual tracer should be replaced by a native RVFI tracer.
    Workload evalution on-going.

- SW toolchain
  - Embecosm business contract finalization on-going



CV32E40X / CV32E40S status

Øystein Knauserud

CV32E40X

- Code cleanups / refactoring
- Removal of TODOs/FIXMEs
- User manual updates
  - Spec updates – priv 20211105-signoff, debug 1.0.0, B 1.0.0-38-g865e7a7and Zce 0.70.1
- PPA optimizations
- LSU prepared for XIF memory interface
- Introduced M_EXT parameter (Multiplier)
- Github issues

CV32E40S

- Weekly merges from CV32E40X
- Github issues
- Bugfixes
- User manual updates
- Dummy instruction insertion is complete
- PPA updates (mainly PMP for better timing)
- CSR shadow flops are now instantiated to avoid removal during synthesis.

CVA6 status

Jérôme Quévremont

Cores TG meeting, 2022-02-07

CVA6 highlights

- U. Minho likely to join OpenHW and contribute to CV64A6 with the H (hypervisor) extension
- Preparing PA gate for the Feb. 28th TWG meeting:
  - Polishing the specification (link)
  - Assembling 2022 work plan (milestones)
- Recent demos on CVA6:
  - FreeRTOS
  - UBoot + OpenSBI + Buildroot Linux + remote debug with Eclipse IDE
- On-going/upcoming work:
  - PPA optimization, CV-X-IF PoC, design updates, CSR YAML description
  - DV env. incremental setup, starting verification with RV32F DIV & SQRT (to be reused by CV32E40Pv2)
  - Yocto Linux

New project proposals / Roadmapping

Technical WG

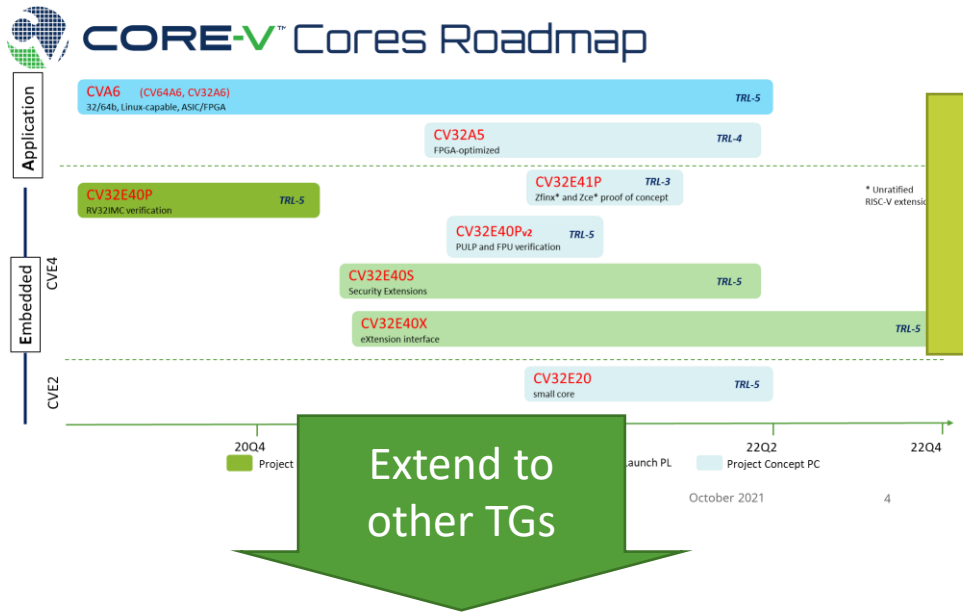
2022-01-24
(excerpt from 2021-12-13)

Capturing strategic vision/roadmap for OpenHW

- Technical WG role:
  - Kick off and vote on new projects
  - Track TG progress
- Technical WG areas for improvement:
  - Members get to know each other (expertise, technical plans…) to foster collaborations
  - Steer OpenHW roadmap beyond current projects
- Actions taken
  - New members' introduction
  - Surveying members' suggestions for new projects → feed roadmap

After 2 years, it is timely to refresh and publish the OpenHW technical roadmap

Roadmapping



Give directions beyond current projects

Extend to other TGs

- Verification TG
- SW TG
- HW TG
- Interconnect TG
- Functional Safety TG

Prepare and publish a consolidated OpenHW roadmap by mid 2022

- sets direction and plan of record
- common look and feel
- based on TG-level roadmap inputs and TWG member review

Next steps on OpenHW Roadmap

- Two TWG meeting to complete new project suggestions
- TGs prepare a timeline map of projects and deliverables by end of **March 2022**. Include
  - Confirmed and potential projects
  - Collaborations between members and with external groups
  - Target TRL…
- Consolidation of TG roadmaps (TG *chairs / TWG co-chairs / OpenHW staff)
- Presentation by TWG co-chairs to TWG for review and ratification (end of **June 2022**)

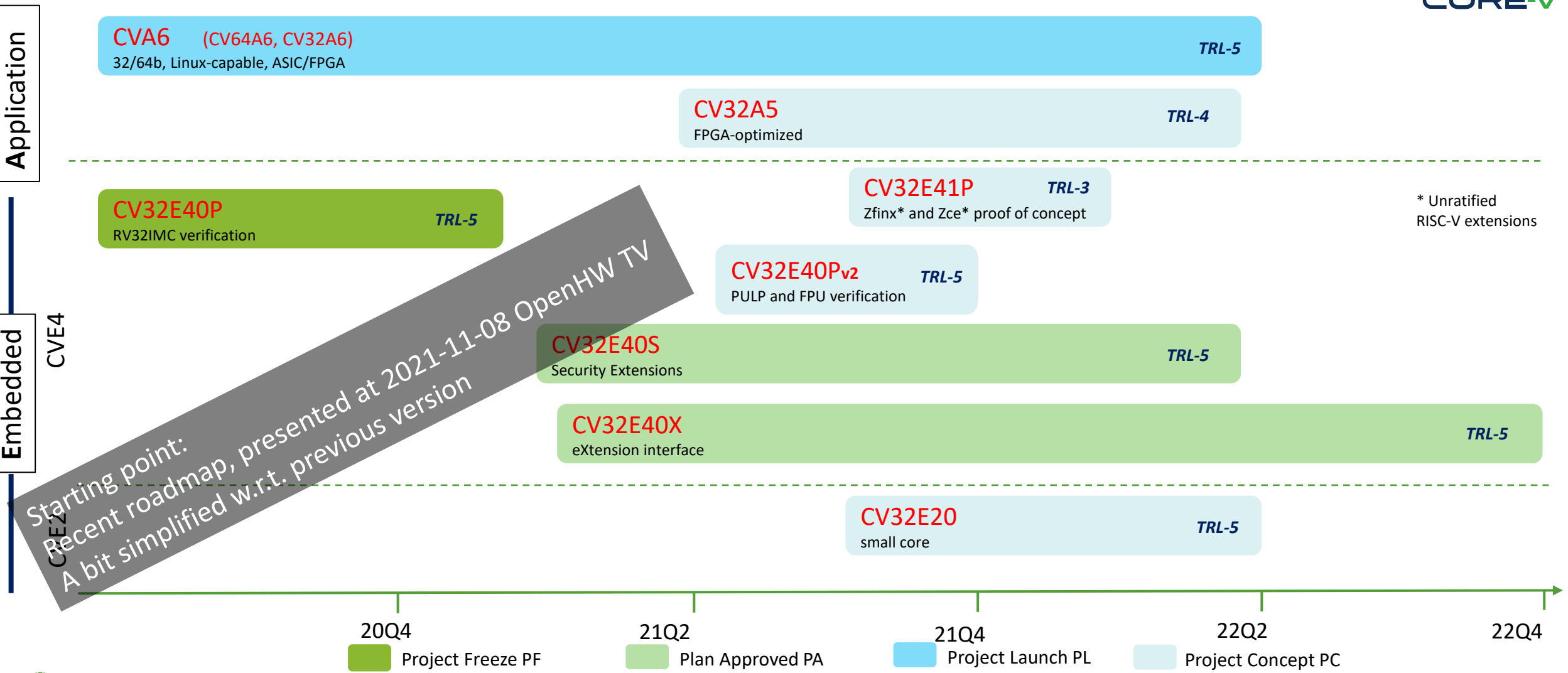
Feedback on this process welcome.

Suggested roadmap term 3 years (e/o 2024)

Road ahead presentation

- Presented at December and January TWG meetings:
  - CHERI protection model
    - Tariq Kurd, Huawei
  - Tiny FPU & relationship to FPU/FPNEW
    - Joe Circello, NXP (+ETHZ)
  - Next steps on chiplets
    - Denis Dutoit, CEA
  - Suggested OpenHW roadmap/project for fault tolerant cores
    - Li Chen, U Sask
  - Out of order cores
    - Duncan on behalf of John Davis, BSC
  - Recap on Multicore interconnect
    - Jérôme Quévremont, Thales (next slides)
  - Qemu
    - Wei Wu, ISCAS
- Slides in https://github.com/openhwgroup/core-v-docs/tree/master/TWG/MeetingPresentations/RoadmapMeeting_211213

CORE-V™ Cores Roadmap



Thank you!