Shape Graphics for RISC-V

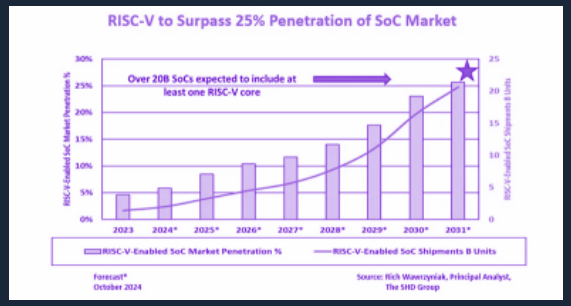
Zheng Zhang
Principal Solutions Architect@ Imagination

Agenda

- RISC-V status
- Graphic importance for RISC-V growth
- Challenge for RISC-V graphics
- Open-source solution
- Imagination’s work on the open-source solution
- Call for actions

RISC-V is raising

- RISC-V CPU performance grow fast
- RISC-V IP ecosystem get strong
- RISC-V based SoC shipment is booming

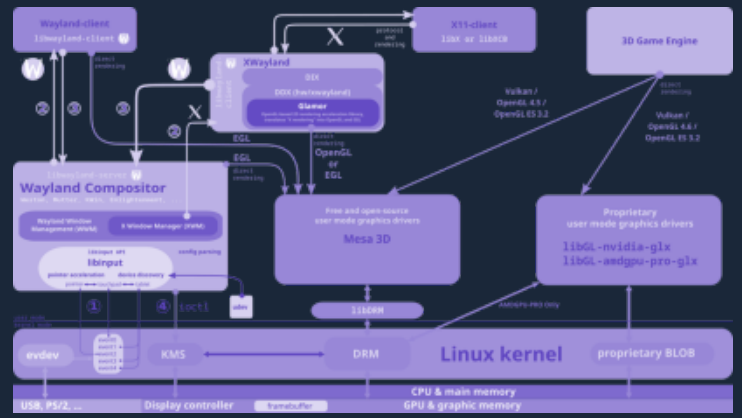


Graphics is the key for RISC-V next level success

- Consumer market is key to grow RISC-V from a hobby to a business
- Consumer are looking for a seamless way to interactive with electronics
- Fluid Graphics user experience is a must in a modern RISC-V design

But Graphics for RISC-V is under challenging

- Graphics performance relay heavily on software optimization
  - SSAO(Screen Space Ambient Occlusion), TAA(Temporal Anti-Aliasing), MSAA(Multisample Anti-Aliasing) etc.
- All commercial level GPUs software are well optimized for x86/arm, not RISC-V
- Graphics has a very complex software stack
- Developers are hard to get GPU hardware details

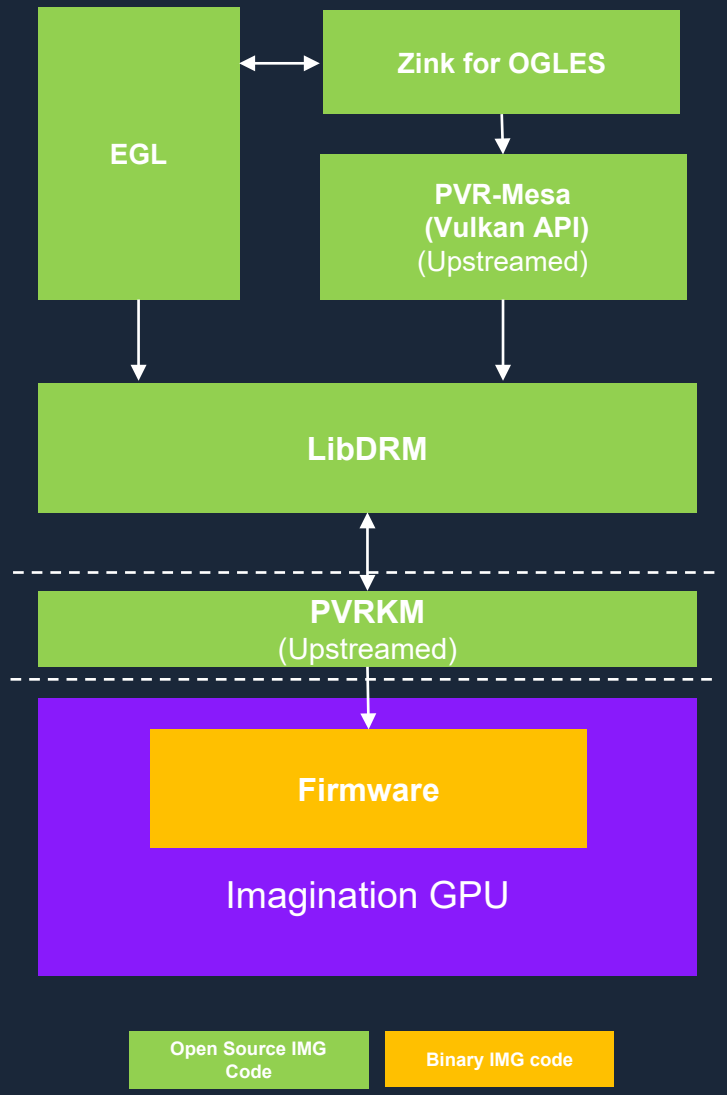


Open source is the solution

- RISC-V community work on a common graphic stack to avoid the work duplication
- Silicon/Software vendors build their unique values based on open source
- Customers get more transparency and security
- Customers get flexible update and longer maintenance
- The whole RISC-V ecosystem get more innovation and cooperation

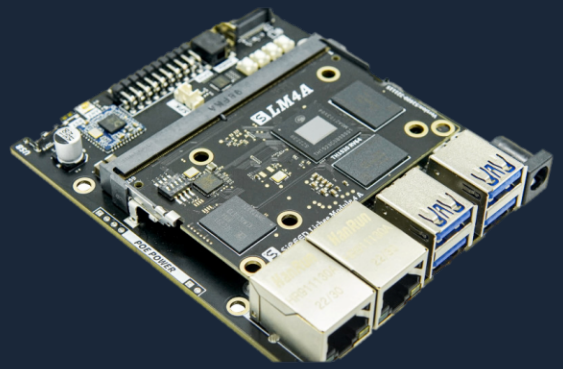
Imagination&Partners work on open source

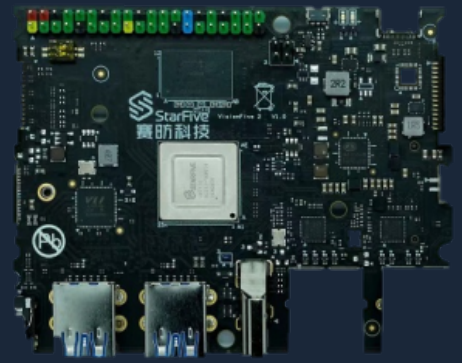
- Imagination has open-sourced DDK
  - https://gitlab.freedesktop.org/frankbinns/powervr
- More and more Imagination GPUs are get supported
  - AXE, BXS etc.
- Contributions
  - https://github.com/KiritakeKumi/mesa-pvr-zink/
  - https://github.com/Icenowy/aosc-os-pvr/tree/master/ddk242
  - …



Call for actions

- Use RISC-V for your work/fun
- Report the problem to the community when you find one
- Fix the issue when you can
- Contribute back to RISC-V community





THANK YOU_

Imagination