Driving Innovation

Evolving the role of software in RISC-V beyond enablement

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In 2021 new ISA extensions positioned RISC-V to grow in key application domains

Fostering adoption in 2022 needs a great leap forward for our software ecosystem

Stakeholders in the RISC-V software ecosystem

Architecture Development and Co-Optimization

Emulators & Simulators

Compilers & Debuggers

Performance Analysis and Modelling Tools

Pre-Silicon Verification

Foundation Software

Performance Libraries

Managed Runtimes

Operating Systems

Software Enablement for Adopters, Independent Software Vendors, and End-Users

Foster adoption and innovation
Foster a workload-driven evolution of the RISC-V ISA
Enable the coexistence with vendor-specific extensions
Manage fragmentation
Standardise the basic platforms
Enable vendors to gracefully transition from existing non-standard solutions
Deliver optimised software support
Foster Open-Source Projects, early-adopters, and academia
Guide the community towards optimisations for RISC-V

Upstream support

for vendor-defined extensions

Toolchains and Runtimes SIG

OpenJDK support

donated upstream and merged

Managed Runtimes SIG

with Huawei and Alibaba Cloud

Unified Discovery

for vendor-defined extensions

Unified Discovery TG

Indirect functions

and optimised string functions

Toolchains and Runtimes SIG

Auto-vectorisation

contributed by our membership

Toolchains and Runtimes SIG

Nested virtualisation

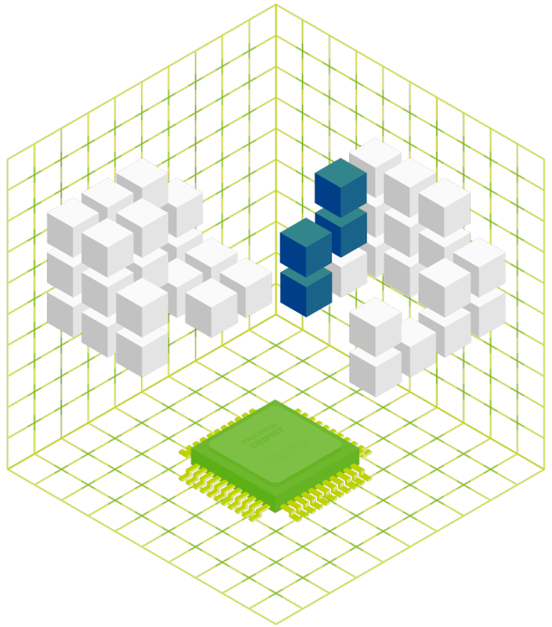
validated in software

Hypervisor SIG

Optimised cryptography
submitted to OpenSSL

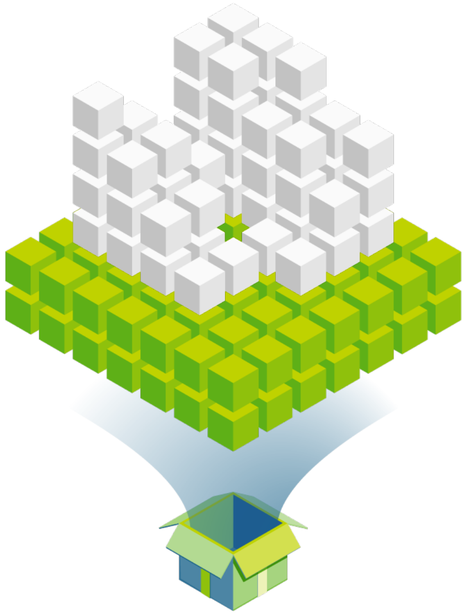
End-to-End **Performance** Workflows

Performance Modelling SIG
Performance Analysis SIG



Domain-specific extensions

Drive the definition of extensions using quantitative and software-driven methodologies to benefit **domain-specific software** workloads and coexistence of **vendor-specific extensions**

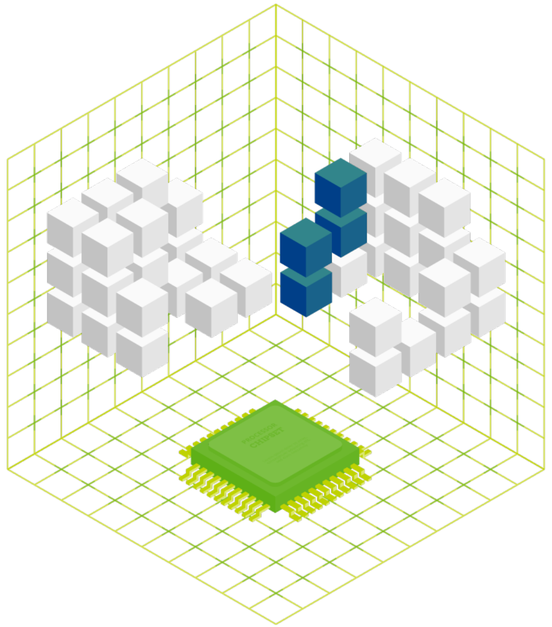


Platform standardisation

Attract independent software vendors and **reduce platform fragmentation** for hardware/software interoperability with off-the-shelf devices and software

Building a contributor culture

Collaborate closely with major **Open-Source Projects** to better align our standardisation and member's contributions with each upstream project's processes



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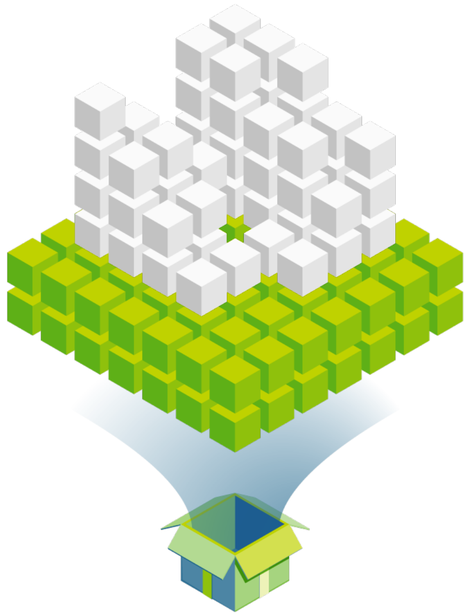
Upstream support for vendor extensions **unlocks performance** for novel applications



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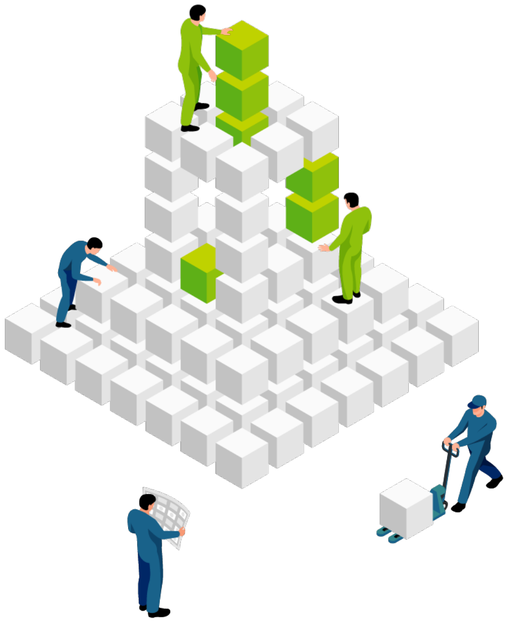
Profiles and Platforms are simplifying the **developer journey**

Member companies are **joined together** to build the best open-source ecosystem



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RVM-CSI

Common Software Interface

Source level portability
Bare-metal applications
Support for modern languages

OS-A Platform

Binary compatibility
Rich operating systems
Investment protection for ISVs

Thank you!

https://lists.riscv.org/g/software

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