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2024 RISC-V 中国峰会

坚持标准，共建信赖

为快速增长的RISC-V生态引入认证体系

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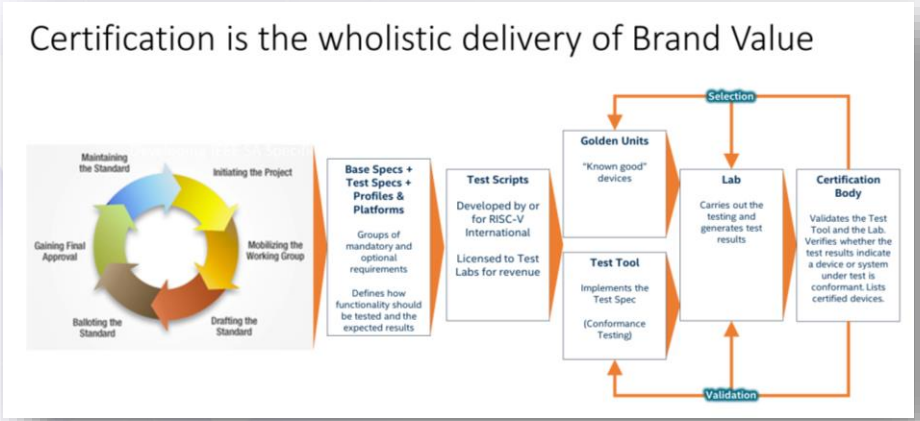
CSC & RVCP Introduction



RISC-V CSC 认证指导委员会 (Certification Steering Committee)

- 认证指导委员会成立于 2023年底
- 联合TSC(技术委员会)和MSC(市场委员会)及广大合作伙伴, 发掘认证项目对与RSIC-V生态的技术价值与品牌价值
- 以促进RISC-V的生态统一和繁荣为宗旨, 为快速增长生态规划和制定一套, 高质量的且可持续发展的认证体系, 并监督并管理RVCP认证项目落地和实施

RVCP (RISC-V Certification Program) RISC-V认证项目

- 验证基于RSIC-V的处理器设计符合统一的架构标准,是对现有自认证体系制度的重大革新
- 为RISC-V生态（如，软件、编译器、调试器）提供信心，确保他们在获得RISC-V认证的产品上运行的正确性
- 并可对 Processor ISA, SoC components 及 Platform 进行多层次认证
- 满足商用级别的认证需求
- 满足RISC-V标准持续迭代和生态快速发展的需求

RISC-V COMPATIBLE

Research of Industry Certifications

CPU ISA Verifications & Certifications

	ARM	ARM System Ready	MIPS	SPARC
Scope	Processor (ISA)	SubSystem	Processor (ISA)	Processor (ISA)
Name of Test Suite	AVS (Arm Verification Suite)	ACS (Arm Compliance Suite)	AVP (Arch Verification Program)	SCT (SPARC Compliance Test)
OpenSource	No	Yes	No	No
Target	All (RTL, FPGA, Silicon)	All (RTL, FPGA, Silicon)	RTL	RTL
Test runner	Licensee	Licensee and Lab	Licensee	Licensee
Cost	Included in License Fee	Free	Included in License Fee	Included in License Fee

Open Standard Technology Certifications

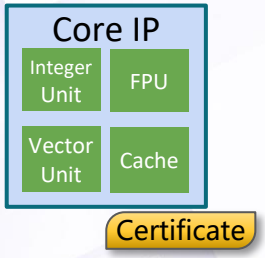
Technology	Owner	Certification Program
Wi-Fi	Wi-Fi Alliance	Wifi Certification Program
Bluetooth	Bluetooth SIG	Bluetooth Qualification Test
USB	USB IF	USB Compliance Program
PCIe	PCI-SIG	PCIe Compliance Program
TEE	Global Platform	TEE Security Certification

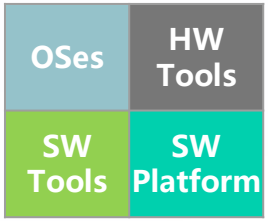
OS and SW Certifications

OS & SW	Certification Program
Android	Android Certified Devices
RedHat	Redhat Hardware Certification
Ubuntu	Ubuntu Certified Devices
SUSE	SUSE YES Certified Program
UEFI	UEFI Self-Certification Test

RSIC-V Certifications Value & Demand

Supply Chain & Certification Value





IP Designer	SoC Designer	Tools / OS Provider	Product Designer	End Consumers
Obtain certification for RISC-V IP components	Prefer to use IP components with RVI certificates	Prefer to support products with RVI certificates	Prefer to use SoC products with RVI certificates, or with full OS support	• Regulatory bodies • Industry Associations

Certificate Demand

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RSIC-V Certification Ecosystem (Proposal)

2024 RISC-V 中国峰会

RISC-V International 国际基金会

TSC 技术指导委员会

- Creates Standards

Processor ISA

SoC Components

Profiles

Platforms

CSC 认证指导委员会

- Propose Business Plans
- Reviews standards
- Evaluate certification materials
- Review Test Reports
- Grants certificates
- Grants waivers
- Staff ensures quality
- Oversees certification labs
  - Ensures consistency
  - Provide support

Certification Plans
Define requirements to achieve certification

Certification Manual

Certification Tests

Reference Models

Legend

Organizations

Deliverables

Certification Demanders 认证需求方

Entities, such as companies, regulatory bodies or industry associations

- Provide certification requirements to CSC
- Ask for certifications to validate competencies

Labs and Services Providers 评估实验室及其他服务提供者

- Labs covering geo-regions
- Have NDAs with customers
- Send customers feedback to CSC
  - Sanitize to remove confidential information
- Collaborate with RVI on Certification Materials
- Support customers
  - May run tests for customers
  - Prepare test reports
  - Propose waivers
  - Propose certificates

Certification Customers 认证客户

- Seeking to acquire certifications for their implementations or products
- Provide necessary information to certification labs

Certification Scope & Phases (Proposal)

	Certified Microcontroller	Certified Apps Processor	Certified SoC Component	Certified SoC Platform
Phase	Phase 1	Phase 2	Phase 3	Phase 4
Scope	Few ISA Features • RV32I Base ISA • Minimal Unpriv ISA • Minimal Priv ISA	Many ISA Features • RV64I Base ISA • Full Unpriv ISA • Full Priv ISA • Superset of Microcontroller	SoC Components (non-ISA) • AIA • IOMMU • PCIe Integration • Peripherals	Processor & SoC • Boot up requirements • Certified Apps Processor Platform • Certified Server Platform
Tests	Assembly Test	Assembly Test	Test Vector	System-level Test
Model	Processor	Processor	SoC Components	System Integration
Est. efforts	Small	Very Large	Large	Medium

CSC 认证指导委员会最新进展

- 2024年3月底议投票通过委员会章程 (Charter)
- 2024年4月投票通过委员会运营准则 (Operating Guidelines)
- 2024年6月
  3个工作组任务完成
  - Industry Survey
  - SAIL Assessment
  - ACT Assessment
- 2024年6月欧洲峰会
  向BoD做阶段性汇报
- 2024年7月
  新启动5个工作组

Customer Survey 市场调查工作组	• Design survey and oversee its deployment • Analyze results and present summary to CSC 开展客户及市场调查, 收集反馈并汇总到CSC
Tests & Models 测试与参考模型工作组	• Define test & model requirements for ISA and non-ISA standards • Evaluate test & model starting points Recommend solutions 评估认证需要的测试集和模型, 并推荐合适的解决方案
CSC Business Plan CSC 商业计划工作组	• Estimate number & types of certification customers • Estimate required resources, funding and revenue • Create budget and milestones with dates 评估认证项目商业模型与预估认证项目所需资源与预算
RVCP Operations 认证项目运营工作组	• Define roles & responsibilities for TSC, CSC, Labs, and customers • Define lab requirements and oversight method by CSC • Define the type of certificates required 定义认证体系中的角色, 制定实验室评估标准与认证种类
MCU Certification Plan MCU认证标准	• Create document to clarify TSC standards and specify behaviors that can be certified 制定MCU认证的标准

RISC-V Certification Honored Contributors

RiSC-V International & BoD

Calista Redmond **Gary Martz**

RISC-V Certification Steering Committee

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	James Ball (Qualcomm)	Jason Smith (VTM Group)
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MCU Certification Plan	James Ball (Qualcomm)	Christian Herber (NXP)
ACT Accessement	Allen Baum (Esperanto)	James Shi (Alibaba)
SAIL Accessment	Derek Hower (Qualcomm)	James Ball (Qualcomm)

CSC Members & Partners

10x Engineers	Akeana	Alibaba Damo Academy
Antmicro	Andes	Beijing Institute of Open Source Chip
Breker	Codasip	Ecarx
Esperanto	Imagination	Intel
Nanjing Qinheng microelectronics	Nuclei	NXP
Qualcomm	Quintauris	Rivos
SiFive	Synopsys	Tenstorrent
ThinkSilicon	Ventana Micro	Vrull

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Thank you
谢谢

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