EXPANDING RISC-V ECOSYSTEM FOR CHINA ADOPTION

扩展RISC-V生态系统，助力中国市场

MAY 2019
## Support Resources for Embedded System Development

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## MCU Selection Guide

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Wide Ecosystem is One of the Key Factors of ARM Success

(from an ARM ppt 10+ years ago)
RISC-V Ecosystem is still under Developing

- Compiler
- IDE
- Emulator, Debugger
- Programmer
- RTOS
- Middleware
- Application software and solution

- Training course
- Books
- University courses, labs
- Website, Community, Forum
- Chinese documents
- Design houses
- ……
NXP - Why are we a Platinum Member of RISC-V foundation

Encourage University & Corporate Research

Influence Roadmap for the benefit all

We want to be with you at the forefront of this revolutionary technology!
Facilitate a Deep Ecosystem

Drive New Architectural & Software Innovations
• One site for all Open-source ISA enthusiasts,
• Open-ISA’s Role → Expand RISC-V Ecosystem
• Open to any and all relevant ecosystem partners
• Developers sharing ideas & experiences …
• The first project VEGAboard, for global users.
• The second project 织女星开发板 (VEGA-Lite) for China mainland only, free for application NOW.

Join the Open-ISA Community。。

<PLAY><BUILD><DESIGN><CREATE>

Meet the VEGAboard: an innovative hardware platform with two RISC-V cores and everything you need to <create> the next big thing.

ORDER BOARD
打开工具，无限可能。
基于RISC-V生态系统为开放式创新铺平了道路。开发时烦恼更少，硬件更好以及享有Open-ISA社区的活跃支援，分享全球开发者的创意和经验。
了解更多关于RISC-V
VEGAboard, 织女星开发板

织女星开发板 is software compatible with VEGAboard, and optimized with:

- Upgrade the debugger to make it can debug both ARM and RISC-V, no need external J-Link.
- Remove battery and optimize the complicated power circuit.
- No FCC/CE certification.
RV32M1 SOC

- Intended only as silicon evaluation vehicle
- Not for SALE!

- 4 CPU cores, up to 72MHz
  - One RISC-V RISCY and one RISC-V ZERO_RISCY
  - One ARM Cortex-M4F and one Cortex-M0+

- Low power consumption and high integration
  - Support BLE, Generic FSK, 802.15.4
  - Security engine include AES128/196/256, DES/3DES, SHA-256, RSA and ECC PK-256/Curve25519
  - USB2.0 FS, SAI support I2S and AC’97, SDHC, EMVSIM
    - 1x32ch FlexIO, 4xUART, 4xI2C, 4x16-bit LPSPI, 1x12bit ADC
    - 2x6ch的PWM, 1x2ch的PWM, RTC, LPTimer
  - 1.25 MB Flash, 384 KB SRAM
开始启动，无限可能。分享全球开发者的工作和经验，使用RISC-V生态系统为开放式创新铺平了道路。了解如何使用织女星开发板的全功能MCU，运行开放的指令集架构（ISA）。

了解更多
Development based on 织女星开发板

- Development Tools
  - Eclipse IDE
  - GNU GCC RISC-V toolchain
  - OpenOCD debugger
- Software
  - Can download SDK from OPEN-ISA with drivers, middleware and examples
- Application development
  - Consistent with general MCU

JV: Java VM
MP: Micropython
Application Example with 织女星开发板 – Smart Lock

• Door lock using BLUETOOTH LOW ENERGY
• Control directly from BLE enabled phone
• Use RV32M1 SDK and implement Bare metal firmware for Smart Lock
• Run firmware and BLE stack on RISC-V Zero_Riscy core
• RSSI-based Auto Lock and Unlock
• Manual Lock and Unlock
• Smart Phone Apps

Can download Application Note and Software from OPEN-ISA
RISC-V Design Contest – www.open-isa.cn ➔ 创意竞赛

**Design Contest Topics**
- Tools (Compiler, Debugger, DEV kit, etc.)
- Software, Middleware, Firmware
- OS, Bootloader
- Application (smart home, industry, IoT, Medical, etc.)

**Prize**
- 1st Prize: DJI Drone * 1
- 2nd Prize: Huawei Phone * 2
- 3rd Prize: BOSE BT earphone * 7
- Participants: VEGA T-Shirt

**Hosted By**
Open-ISA            NXP

**Directed By**
中国RISC-V产业联盟（CRVIC）
Support NXP CUP Smart Car Competition in China

- 3rd Partner designed core board with RV32M1 SOC for University teams selection
University Programs and Partnership

- University Course
- Joint-Lab
- Books
- Research Project
- Tools
- Software
- Various Boards
- Trainings

- Welcome University, Institute, Tool vendors, Software Company for further cooperation…
Visit our Booth, Get 织女星开发板 and VEGA T-Shirt

Log on www.open-isa.cn, download materials, join the community