Introduction to SiFive RISC-V Core IP

Drew Barbier, Senior Product Marketing Manager
Silicon at the speed of software.

Design RISC-V CPUs in an hour. Get custom SoCs designed in weeks, not months. Impossible? Not anymore.

Start Designing
# SiFive RISC-V Core IP Portfolio

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## U Cores
- **64-bit application cores**<br>Linux, datacenter, network baseband
- **Linux-capable application processors**
  - U5 Series: Linux-capable application processors
  - U7 Series: High performance Linux-capable processors
  - U8 Series: Highest performance application processors

## S Cores
- **64-bit embedded**<br>Storage, AR/VR, machine learning
- **Area-optimized 64-bit microcontrollers**
  - S2 Series: S21 Standard Core: No Arm equivalent
  - S5 Series: S51, S54 Standard Cores: Compare to Cortex-R5, R5F
  - S7 Series: S76, S76-MC Standard Cores: Compare to Cortex-R8

## E Cores
- **32-bit embedded**<br>MCU, edge computing, AI, IoT
- **Our smallest, most efficient cores**
  - E2 Series: E20, E21, E24 Standard Cores: Compare to Cortex-M0+, M4, M4F
  - E3 Series: E31, E34 Standard Cores: Compare to Cortex-R5, R5F
  - E7 Series: E76, E76-MC Standard Cores: Compare to Cortex-M7
SiFive Secure Debug and Trace IP

Access, Observe, Control

SiFive’s Debug and Trace IP portfolio gives developers the power to efficiently debug SiFive based designs. From simple run control debug, to cross-triggering, to advanced multicore trace solutions, all delivered pre-integrated and verified together with SiFive’s RISC-V Core IP in a single deliverable.
Implementing An Open, Scalable and Secure Platform

- Secure Lifecycle
- Communications
- Operating System
- Validated Crypto Engines
- Threat Prevention
- RoT
SiFive Core Designer
Your interface to SiFive RISC-V Core IP

- All SiFive Core IP is configured and delivered via the SiFive Core Designer Web Portal
  - Simple, Easy to Use, Web Interface

- Variant are generated with click of a button and available from the Workspace

- Variants contain
  - RTL matching the configuration, including a testbench, and other collateral needed to realize the design
  - Documentation specific to the design
  - Customized bare-metal BSP for easy integration into SiFive’s SDKs
  - FPGA bitstreams for common FPGA development boards for easy software benchmarking of the RC
Scalable software solutions to meet the demands of vastly configurable IP

**Freedom Tools**
- Compiler
- Debugger
- Simulator

**Freedom Metal**
- Portable
- Bare-Metal
- Library

**Freedom SDK**
- Build Scripts
- Operating Systems
- Examples

**Freedom Studio**
Thank You

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FOOTNOTES: