VC Perspective on RISC-V

How did RISC-V happen so quickly and why will it change everything?
Who is Sutter Hill Ventures?

Founded in 1962 — our approach centers on great people, hard technology, big markets, and long-term capital.

We have long history of success in chips, systems and software.

We’re part of SiFive’s founding story.
So, what is our approach?

We love founding teams that are led by brilliant domain experts.

If we build it, they **will** come.

“Better, cheaper or both”

No man’s land.

If we build it, will they come?

We can build it, but will they come?
So how did SiFive attract VC money?

Here are some of the original slides from October 2015.
Semiconductors: $350B industry at a crossroad

What’s next? Open Source and Mass Customization

“Moore’s Law” is only for the rich

- Cost per transistor no longer shrinking
- Exploding design cost, time complexity

Computing is changing

- IoT & cloud demanding better perf/Watt
- IoT, machine learning and security require customization

Semi Biz Model Failing

- ARM monopoly crippling system innovation
- Biz model not aligned to demand from cloud & IoT

Because Moore’s Law only ends once.
Why Now? Enabling Technologies ...

RISC-V – A growing community building around a free and open ISA. Several companies building chips already – reduce initial software costs and extend it as custom hardware features needed.

Chisel & Agile design flow – Cast hardware engineering problems as software ones. Leverage ideas from modern software engineering practices.

SiFive’s Answer: Custom Chips-as-a-Service

Cloud service built for system architects

Vibrant Ecosystem
SW Framework
Developer focus
Chip Design Factory
Agile
Automated
Scalable

Customer Spec Chips CPU Cores

30,000+ Customers

TOP 10 CHIP BUYERS
MEDIUM-LARGE ACCOUNTS
SMALLER ACCOUNTS / START UPS / MAKERS ETC.

~140B
~110B
~100B
So What?

Domain Specific Architectures - a new golden age for computer architecture

The end of the road for general purpose computing & the future of computing.

John Hennessy
Stanford University

What we have in front of us are some breathtaking opportunities disguised as insoluble problems.

John Gardner
Secretary of Health, Education, Welfare
Many, huge DSA Opportunities

Requirements to drive the next 20 years of computing to enable mobile (post-PC), cloud and IoT computing

- Free & Open Architectures
- Enhanced Security
- HW/SW Co-Design
- Agile Chip Development

Hint: chip market is 100x CPU licensing market

Revenue Share

- Other
- ARM
- $1.5B

- General Purpose
- Customer Specific
- Application Standard Product
- $200B

CPU IP Market

SHV 1962
Where are future RISC-V opportunities?

Everywhere - this is one of the largest markets in all of technology

When cost of customization goes down, new vertical solutions emerge.

“Software is eating the world”: Public cloud drove down the cost of customized, vertical applications (SaaS)

RISC-V is the core engine of mass-customization - new opportunities for chip and system companies
The future of computing will be built on RISC-V.

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Stefan Dyckerhoff
Sutter Hill Ventures
Established 1962- Palo Alto, CA