

RISC-V: 新的产业标准

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2021 RISC-V CON



RISC-V 全球社群飞快成长

2015 to 2021



Courtesy of: RISC-V International Association



RISC-V 的优势分析



■ Open source ISA

- Simple, Clean-Slate
- Modular design. Configure only what is needed
- Strict compatibility regulated

■ Extensibility

- Engineer could add own instruction sets, extensible for DSA (Domain-Specific Acceleration)

成熟的生态系

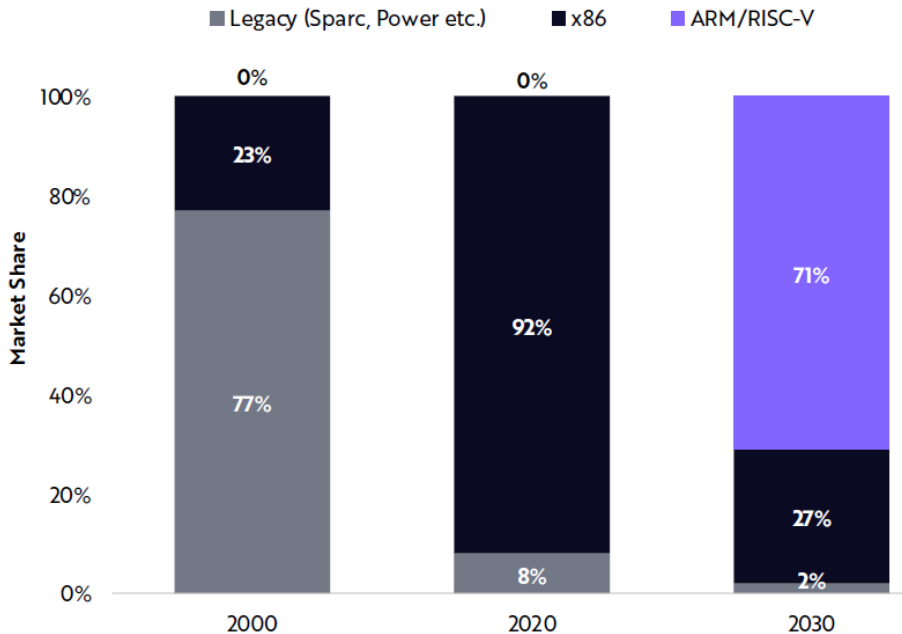


Courtesy of: RISC-V International Association

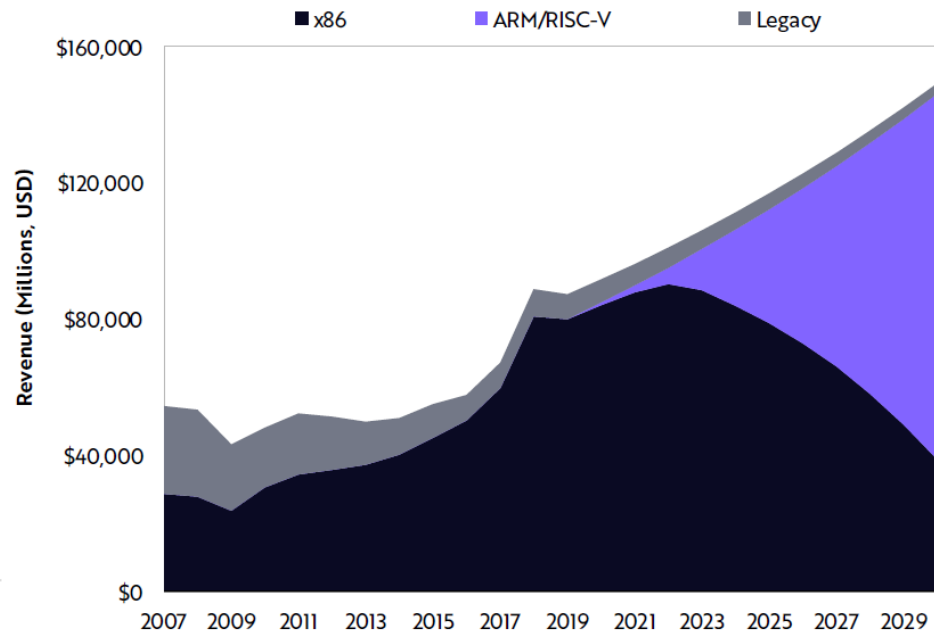
RISC-V 与 ARM 在 2030 或将成为新的处理器标准



The Data Center Architecture



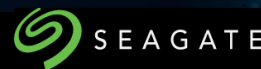
Total Server Revenue



Courtesy of: ARK Investment Management LLC



Maturing the RISC-V Ecosystem



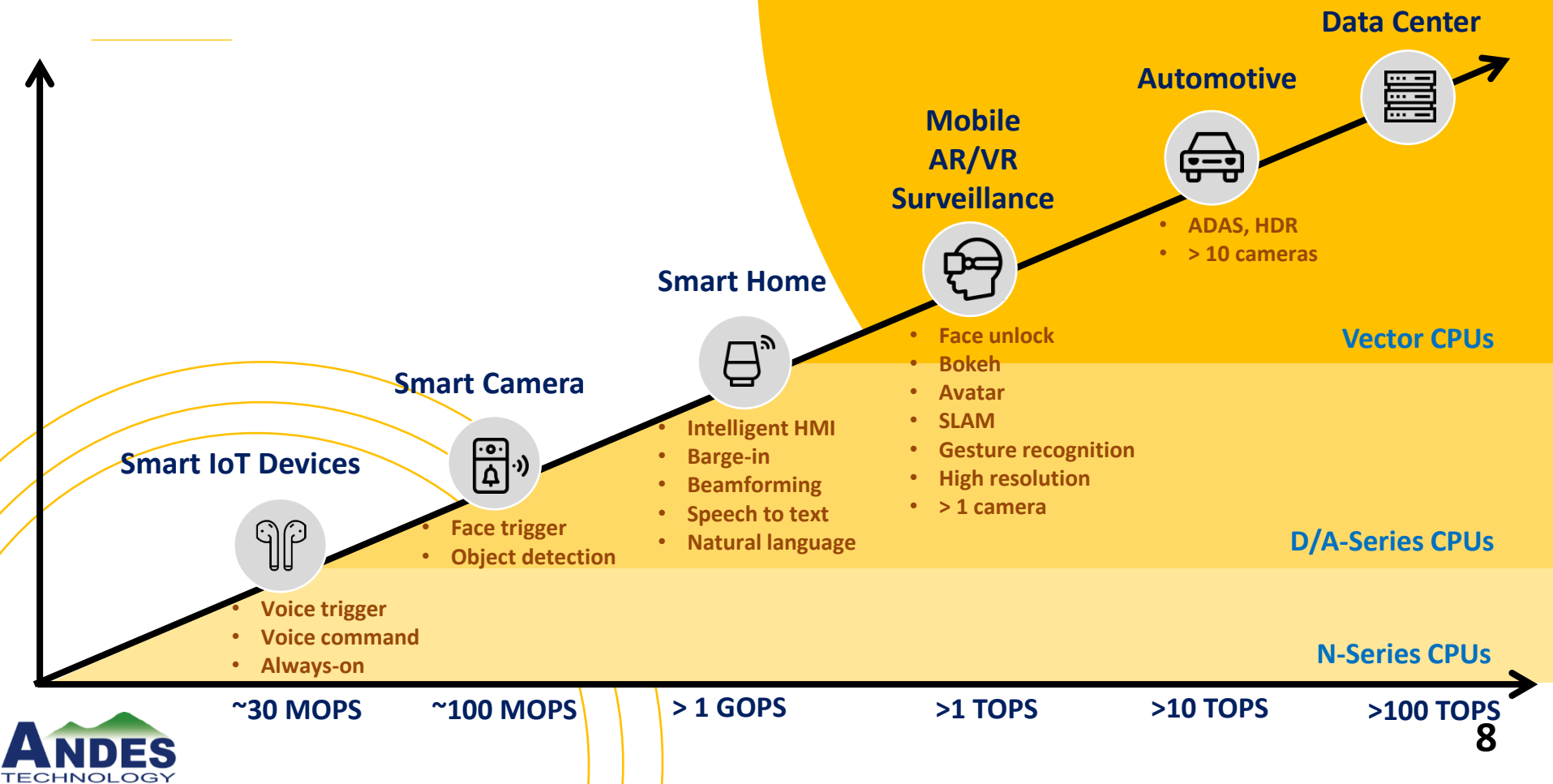
Electronics innovation for power, performance, security, and rapid deployment/scale



Seagate 与 WD 俱皆拥抱 RISC-V

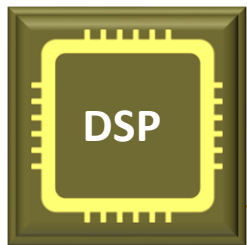
- ▶ Seagate Designs RISC-V Cores to Power Data Mobility and Trustworthiness. Will bring new stream to one billion cores shipping each year
- ▶ Western Digital announced plans for its own RISC-V processor SweRV series with goal to ship one billion RISC-V cores in its various storage products per year.

新商机：晶心RISC-V 处理器适合用于各项新兴应用

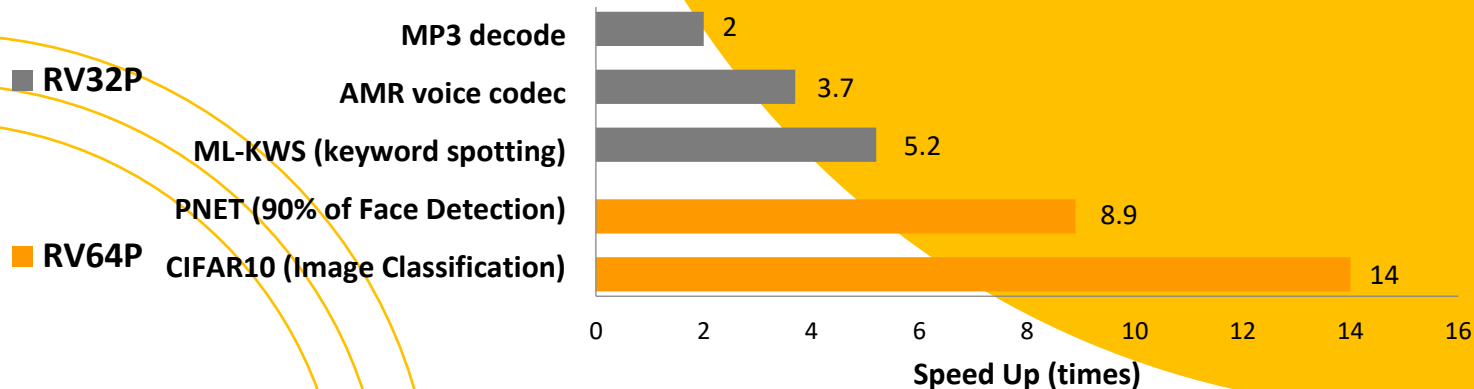


RISC-V DSP Extension 适合各项应用

- Andes contributed market-proven DSP(SIMD) as P-Extension
- Designed to accelerate slow video, audio/voice and low data rate DSP workloads

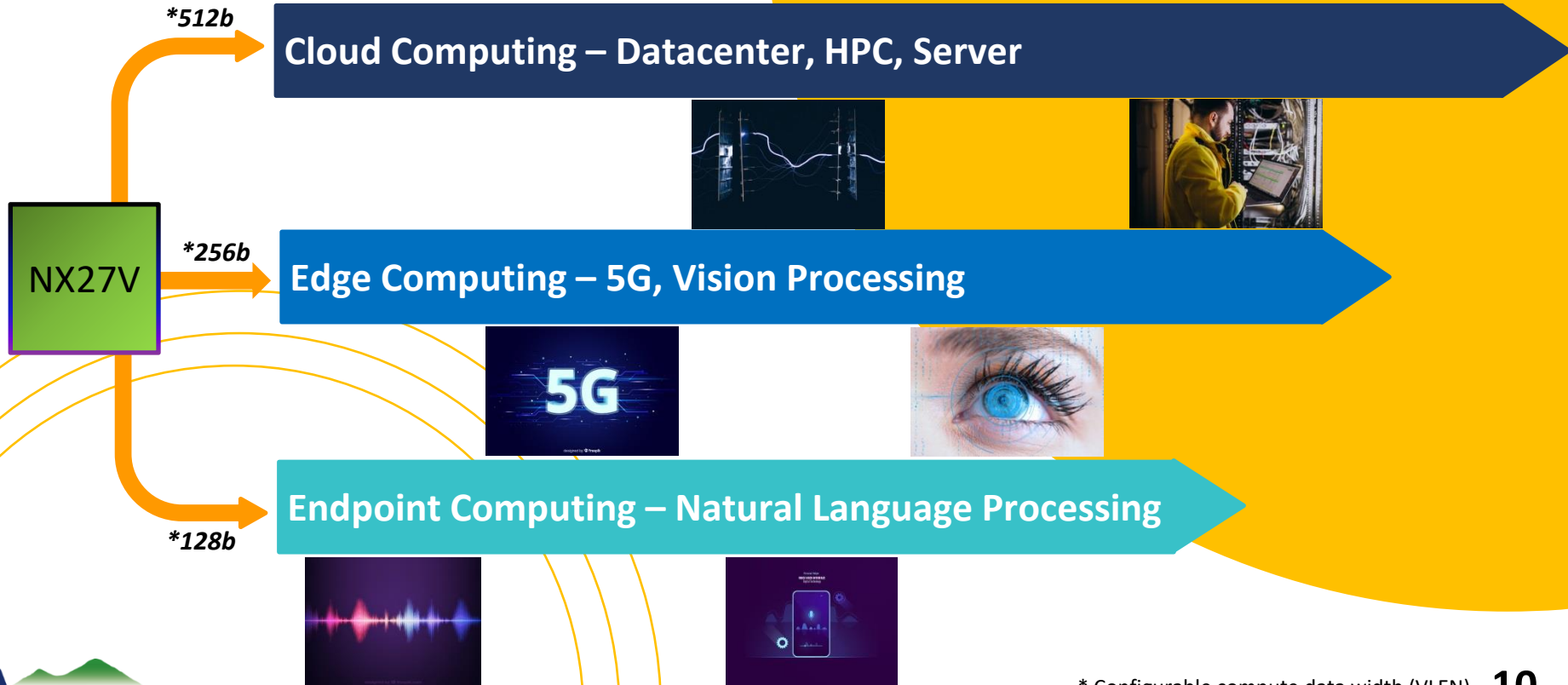


Real world speedup using P-Extension



❖ Increase power efficiency to your DSP applications

将向量处理器导入各层次运算应用

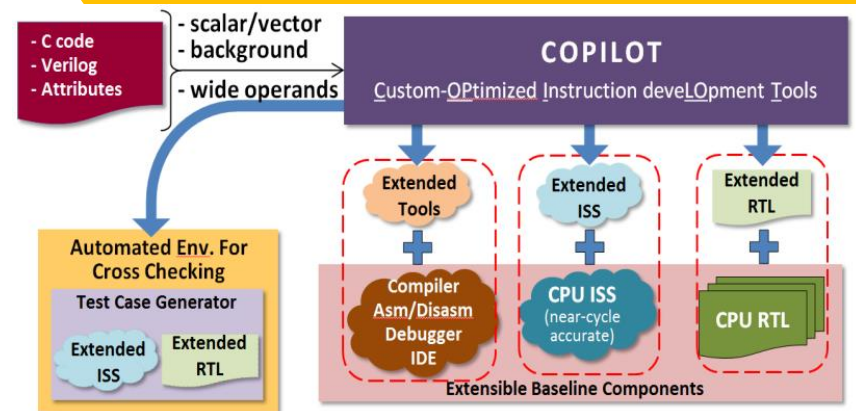


Andes Custom Extension



- ❖ ACE unlocks RISC-V's Potential of DSA
 - Define ACE instruction to handle time critical codes
 - Another approach to co-processor or accelerators

- ❖ All-in-one **COPILLOT** development environment
 - Automation tool and ease of use
 - Extensions are easy to re-use, can be used as a library



晶心持续提供最佳RISC-V处理器 IP

Cache-Coherent 1-4 Cores

RV32/RV64

A25MP AX25MP

Vector MemBoost

NX27V A27/AX27 A27L2

A45/D45 A45MP AX45MP

5-stage (1.1 GHz)

8-stage (1.2 GHz)

Benefits

512-bit Stores Mem

Total Server Revenue

Revenue (Millions, USD)

2007 2009 2011 2013 2015 2017 2019 2021 2023 2025 2027 2029

■ x86 ■ ARM/RISC-V ■ Legacy

Andes Embedded

Applications:

- ❖ AIOT, Comm., ML/DL, Multimedia, Networking, Storage
- ❖ For data processing as well as control processing

晶心各处理器产品拥有的优势

Performance & Extensibility

- Leading PPA and code size
- Rich data processing in P, V, and ACE

Configurability

- Flexible configurations for rich features

Maturity

- Compiler optimizations, and SW stacks
- Comprehensive features in AndeSight IDE

- ▶ **Open source ISA RISC-V is emerging as a major CPU standard**
- ▶ **Paradigm shift to RISC-V may bring new opportunities through real innovation**
- ▶ **Andes offers comprehensive RISC-V solutions**
 - **>20 processors offering and growing**
 - **ACE for AI or DSA Acceleration**
 - **Rich development tools and SW eco-system**
- ▶ **Andes is a reliable RISC-V CPU provider to the world**

RISC-V已是必然的趋势！



谢谢!