

Qualcomm

Going **BIG** With the **RISC-V Ecosystem**

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Agenda

Specification and ISA Progress

Commercial Success in Application
Processors: The next frontier for RISC-V

Which Ecosystem to pursue and How
Call to Action



Qualcomm

Engineering Human Progress

RISC-V International: an Instruction Set Powerhouse!

Testament to the power of an Open Standard & Community Collaboration

ISA

2 ISA Specs, Priv and Unpriv
@ 135 Ratified Extensions!

Profile

5 Profiles: RVA20, RVI20, RVA22, RVA23 &
RVB23

Non-ISA

19 Non-ISA Specifications
(IOMMU, AIA, RAS, QOS, etc)

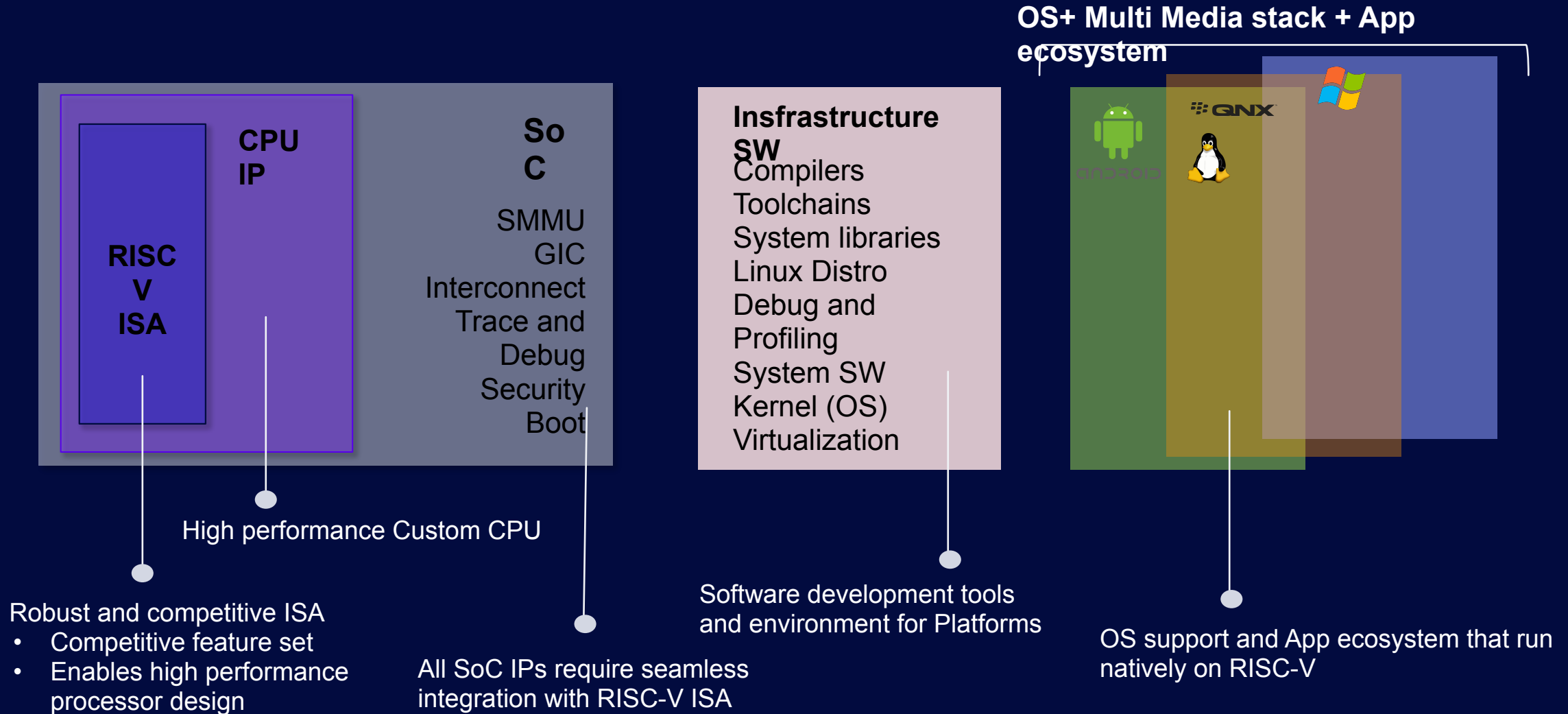
Accelerating Transition from “ISA Mindset” to “Ecosystem Mindset”

Applications Processors: The next frontier

What do we mean by **Ecosystem Mindset**?

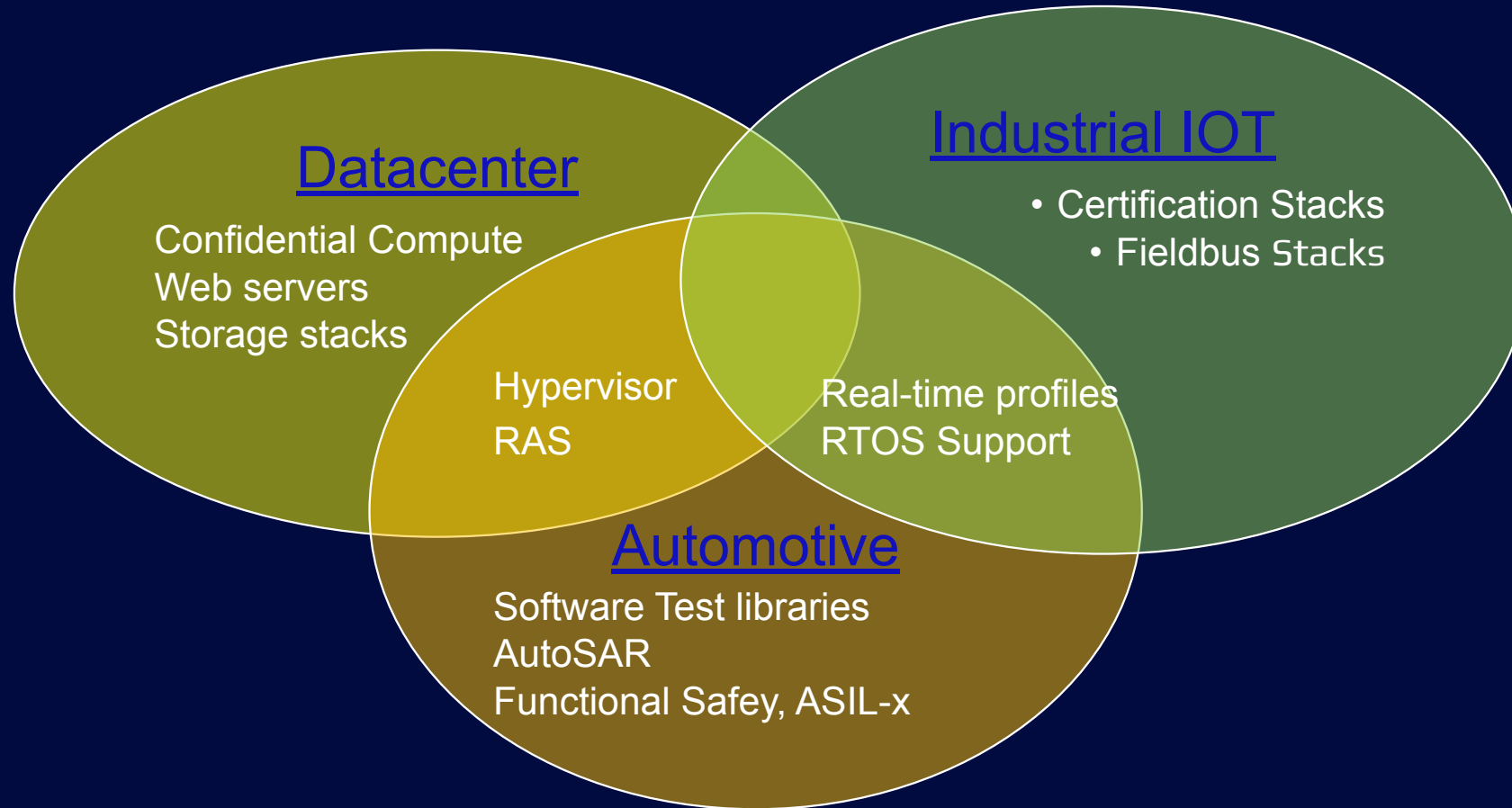
- “*Customer-first*” Approach: look at things from a stakeholder’s viewpoint
- Create an environment that makes it easy for a *large number* of newcomers *without expert knowledge* to obtain what they need
- Pro-actively engage with software vendors, ODMs, OEMs, product makers, etc. to make sure that *their* needs are being met
- Continue investing in *Internal House Keeping*
- Build a strong *Certification Program*
- “*The size of the pie is not fixed*” – we have more to benefit from each other’s success than not. The size of the pie grows with each member’s success!

RISC-V Applications Processor Commercial Success: More than ISA



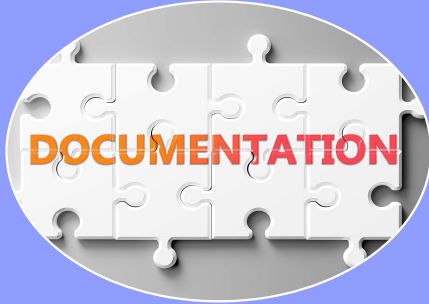
“Least High-hanging” Fruit

Where to focus our limited resources?



At the end of the day, nothing moves like an ecosystem like a competitive product!

Improved House-Keeping



Adopt **normative rules-based specifications** for ecosystem independence

Create documentation tools to search for extensions, **options**, CSRs...



Reference Model

We need a **single** reference model that is complete (including all options), fast, precise, and integrated with documentation.



Architecture Validation

Keep the suite current, or enable certification as an alternate priority
Create path to **audit** validation with documentation and reference model.

Clean and Consistent View of Architecture to all Stakeholders

Call to Action

- Transition our thinking and vocabulary of RISC-V **as an ecosystem**, not just an ISA
- Adopt a “**developer first**” AND “**customer first**” mindset
- Solicit outsider feedback to identify the big gaps
- Invest more in **internal house-keeping**
- But first, congratulate your colleagues, the community and the RISC-V staff on the progress to date!



Thank you

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