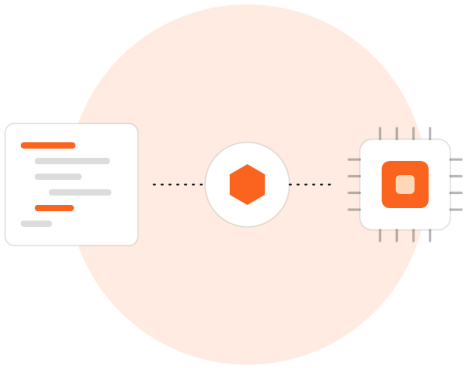
Custom processor design, accelerated

How Andes Technology sped up RISC-V customization and verification with agentic AI.



ChipAgents Helps Andes Technology Dramatically Accelerate Custom Processor Design and Verification

Challenge:

As processor architectures grow increasingly complex and demand for customized silicon accelerates, semiconductor engineering teams face mounting pressure to deliver new functionality faster without compromising design quality or correctness. Traditional processor development workflows require extensive manual effort to understand legacy RTL, manage architectural dependencies, and maintain verification environments, creating bottlenecks that slow development cycles and limit engineering scalability.

Andes Technology, a leading supplier of RISC-V processor IP and a Founding Premier member of RISC-V International, faces these industry-wide challenges as it develops and customizes complex processor designs to meet evolving customer requirements. Customizing critical subsystems such as the Memory Load-Store Unit (LSU) traditionally requires weeks of manual RTL analysis, dependency tracing, and correctness validation. Similarly, Bus Interface Unit (BIU) verification demands significant engineering effort to synchronize specifications, update verification environments, and develop tests for complex concurrency scenarios. Together, these labor-intensive processes increase development time and place growing demands on engineering resources, making it increasingly difficult to scale processor customization and verification efficiently.

Solution:

In response, Andes deployed ChipAgents: an agentic AI solution built specifically for semiconductor engineers.

Moving past the tasks of a generic coding assistant, ChipAgents helps teams navigate specification, legacy RTL, verification environments and other engineering data that make up day-to-day chip development. By reducing the time spent hunting for information, updating infrastructure and performing repetitive tasks, ChipAgents allows engineers to focus on solving engineering problems.

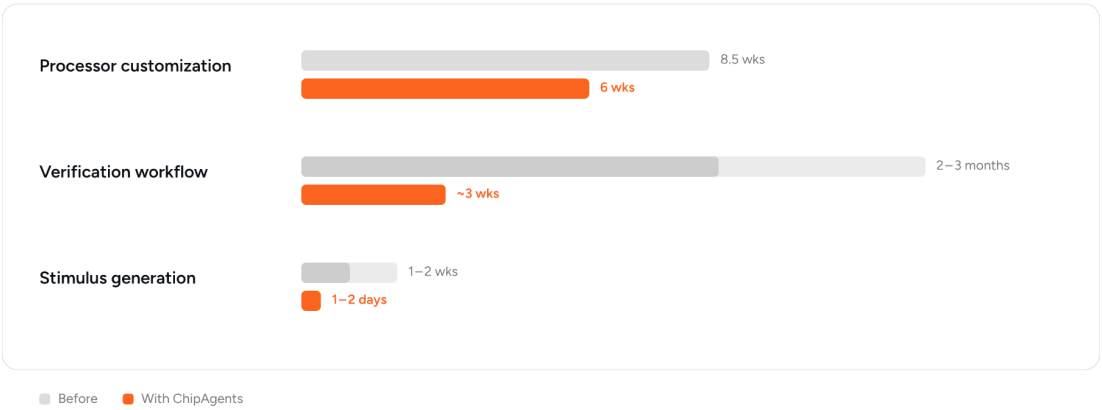
> As processor architectures continue to evolve, both customization and verification are becoming increasingly resource-intensive. ChipAgents helps our teams reduce manual effort across multiple engineering workflows, allowing us to accelerate development schedules while maintaining the quality and correctness required for production processor designs.
>
> **Yung-Ching Hsiao**
> Senior VP of R&D, Andes Technology

Results:

By leveraging ChipAgents, Andes reduced workflows and tasks dramatically. In production deployments:

- Processor customization tasks decreased from 8.5 weeks to 6 weeks, a 30% reduction in development time.
- A separate verification workflow was cut from two-to-three months to approximately 3 weeks.
- Memory Load-Store Unit (LSU) was reduced from 8.5 weeks to 6 weeks while maintaining architectural correctness.
- Complex verification stimulus generation tasks that previously required one to two weeks of engineering effort were reduced to as little as one to two days.

Before and after ChipAgents



Conclusion

Together, Andes and ChipAgents are expanding AI across multiple workflows, with a shared goal of accelerating the journey from design intent to tapeout.

The Andes deployment reflects a reality many engineering teams are dealing with today. Processor development isn't getting simpler, and customers want to accelerate timelines. Every new feature, customization request and verification cycle adds work to already stretched engineering teams. With ChipAgents, manual effort is removed from the development process, so engineers can spend more time building and less time maintaining.