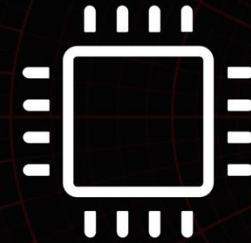


Untapped Potential of Wireless SoCs

From Connectivity to System Consolidation

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tech t|ks
WEBINAR SERIES



**WIRELESS
COMPUTE**

SPEAKERS



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Agenda

- 01** MCUs Today
- 02** The Shift in Architecture
- 03** Unlocking the Potential of Wireless SoCs
- 04** Demo
- 05** Q&A

Wireless SoCs Are Treated as Radios

Used for connectivity, not system control

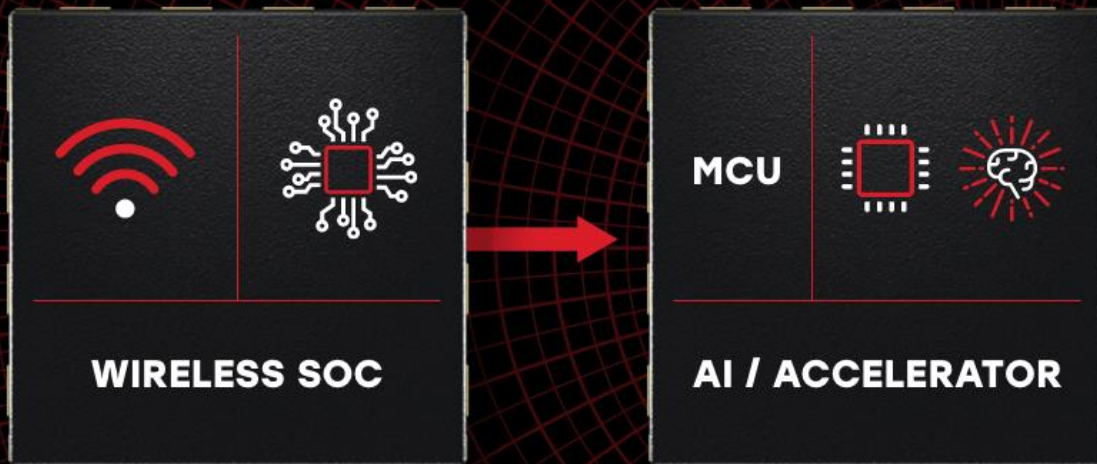
- Often operates as a co-processor rather than system controller
- Offloads PHY/MAC stack from host MCU

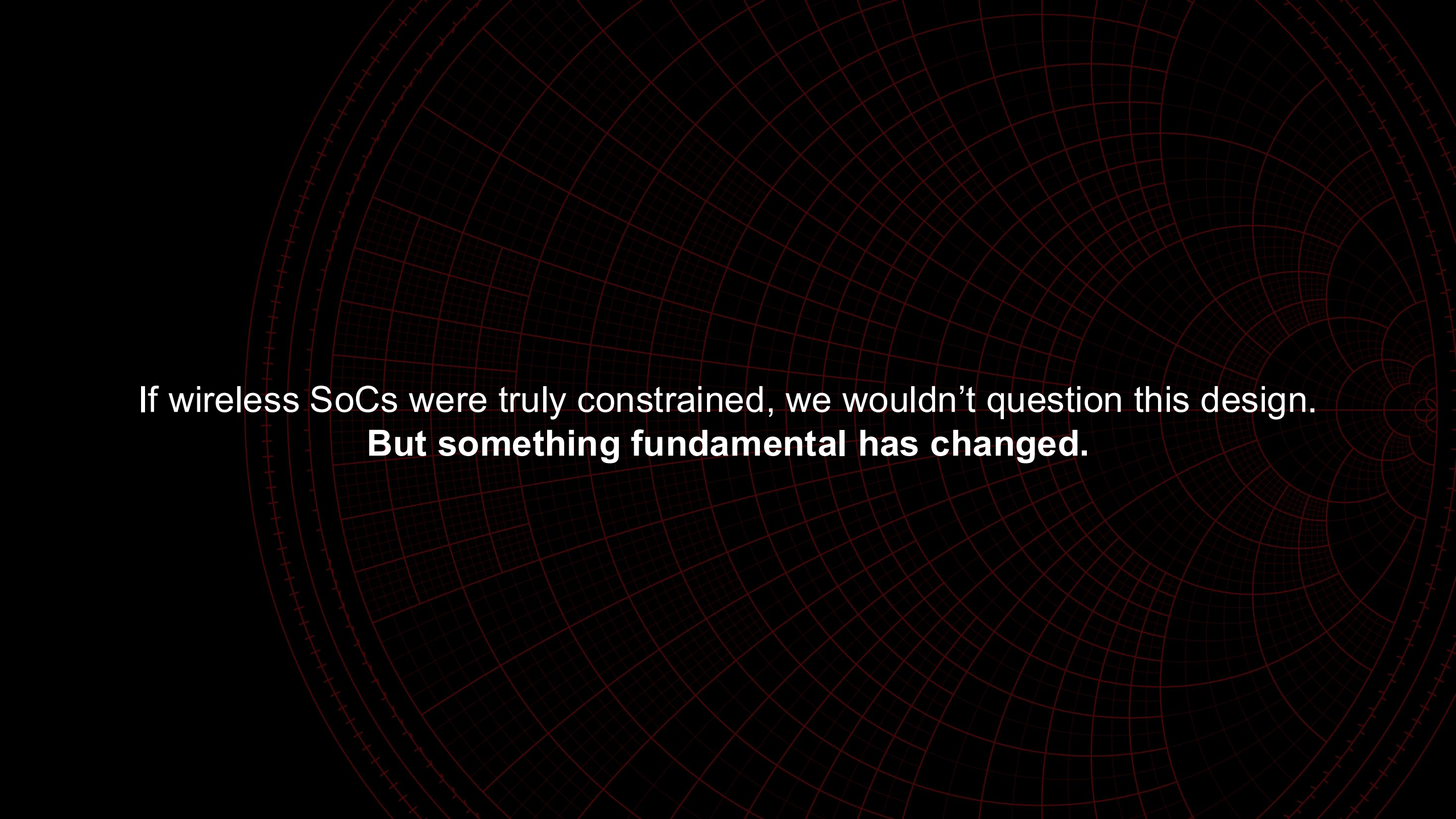
External MCU handles control + application

- Provides flexibility for scaling compute and memory
- Manages peripherals, sensors, and user interface along with RTOS.

Adds complexity, power, and integration overhead

- Requires additional interfaces, memory, and software integration
- Increases system power and coordination between multiple processors.

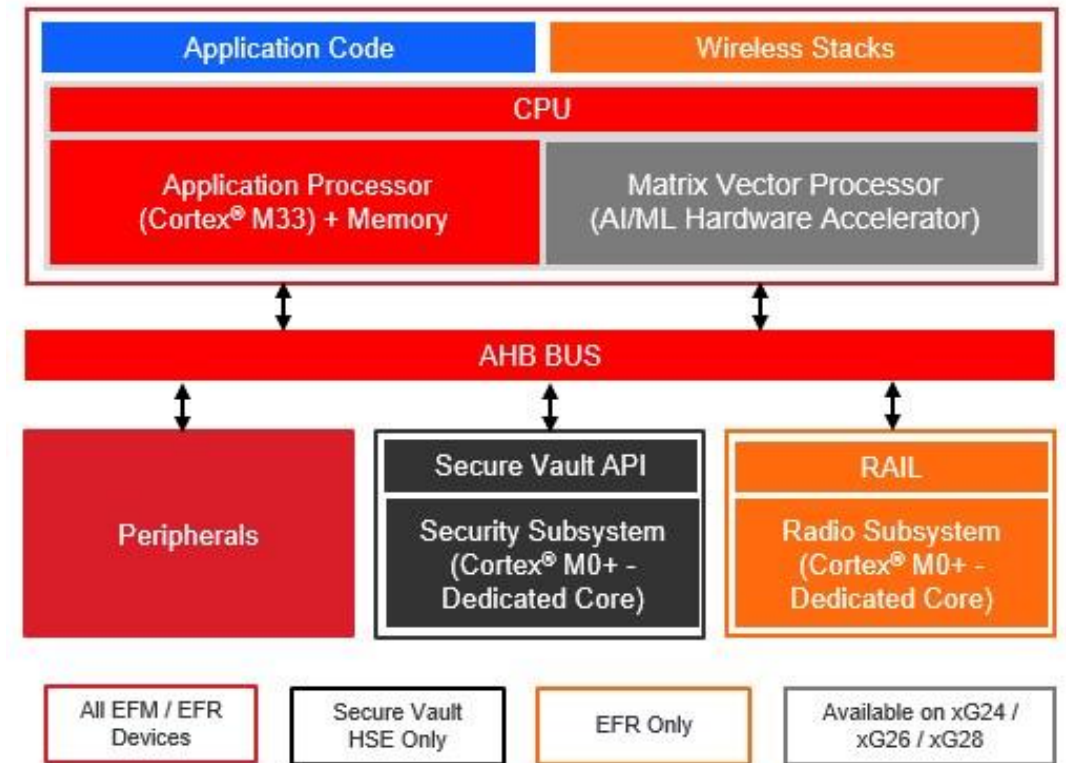




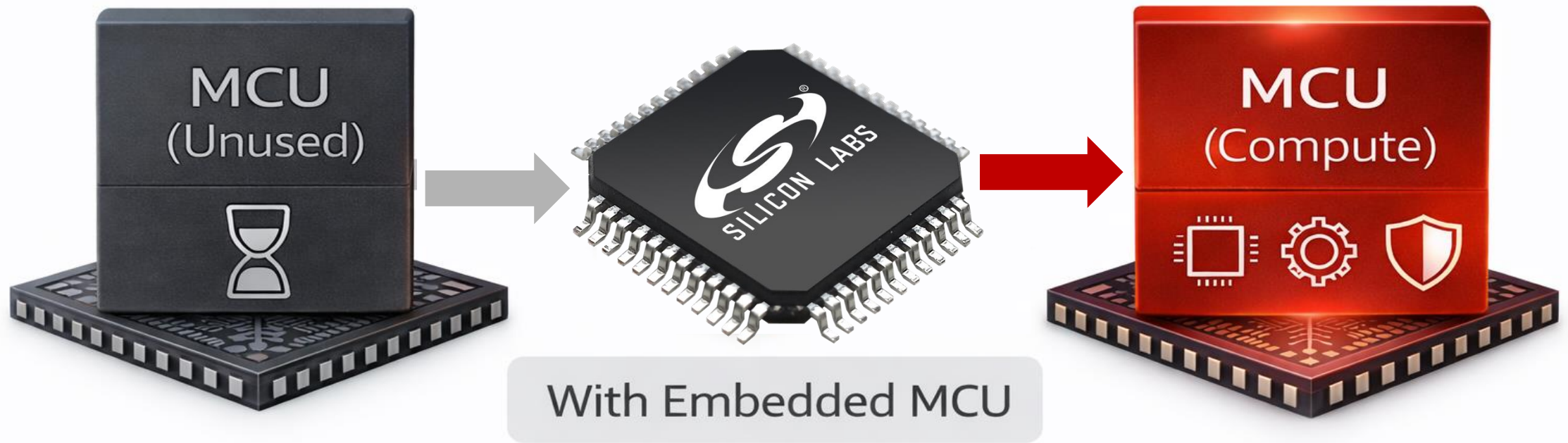
If wireless SoCs were truly constrained, we wouldn't question this design.
But something fundamental has changed.

What Changed? The Architecture Did.

- **Multi-core architecture separates workloads by function**
 - Application processing, radio operation, and security execution are isolated, and improve performance
- **Radio and security have own cores**
 - Ensures most latency critical operations are handled locally, less interruption of application core
- **Peripherals with PRS enables variety of use cases**
 - Peripherals communicate and react without waking the application core, preserving MCU headroom
- **Event-driven design maximize usable compute and lowering power consumption**
 - Application processor runs code when needed, not servicing routine hardware events allowing it to remain asleep longer



So Why Do We Still Use An External MCU?



Historically Valid Reasons

- Need higher compute performance
- Separation of concerns (radio vs application)
- Design flexibility and scalability



Do these still hold?

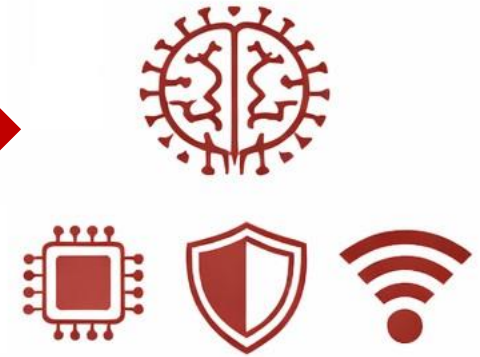
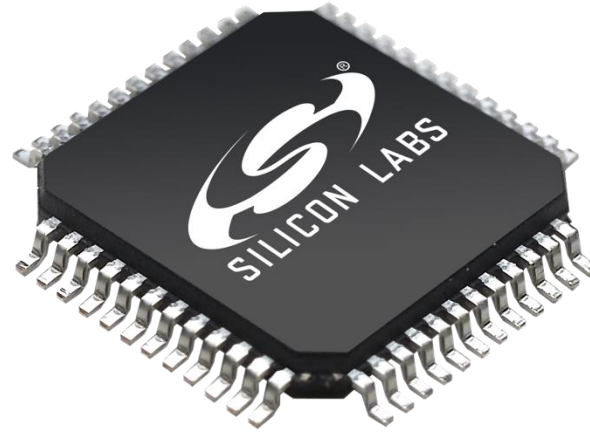
- Is compute really limited anymore?
- Are workloads still tightly coupled?
- Does integration now offer better efficiency?

If We Remove The External MCU... What Becomes Possible?



- **Control**

System and application management



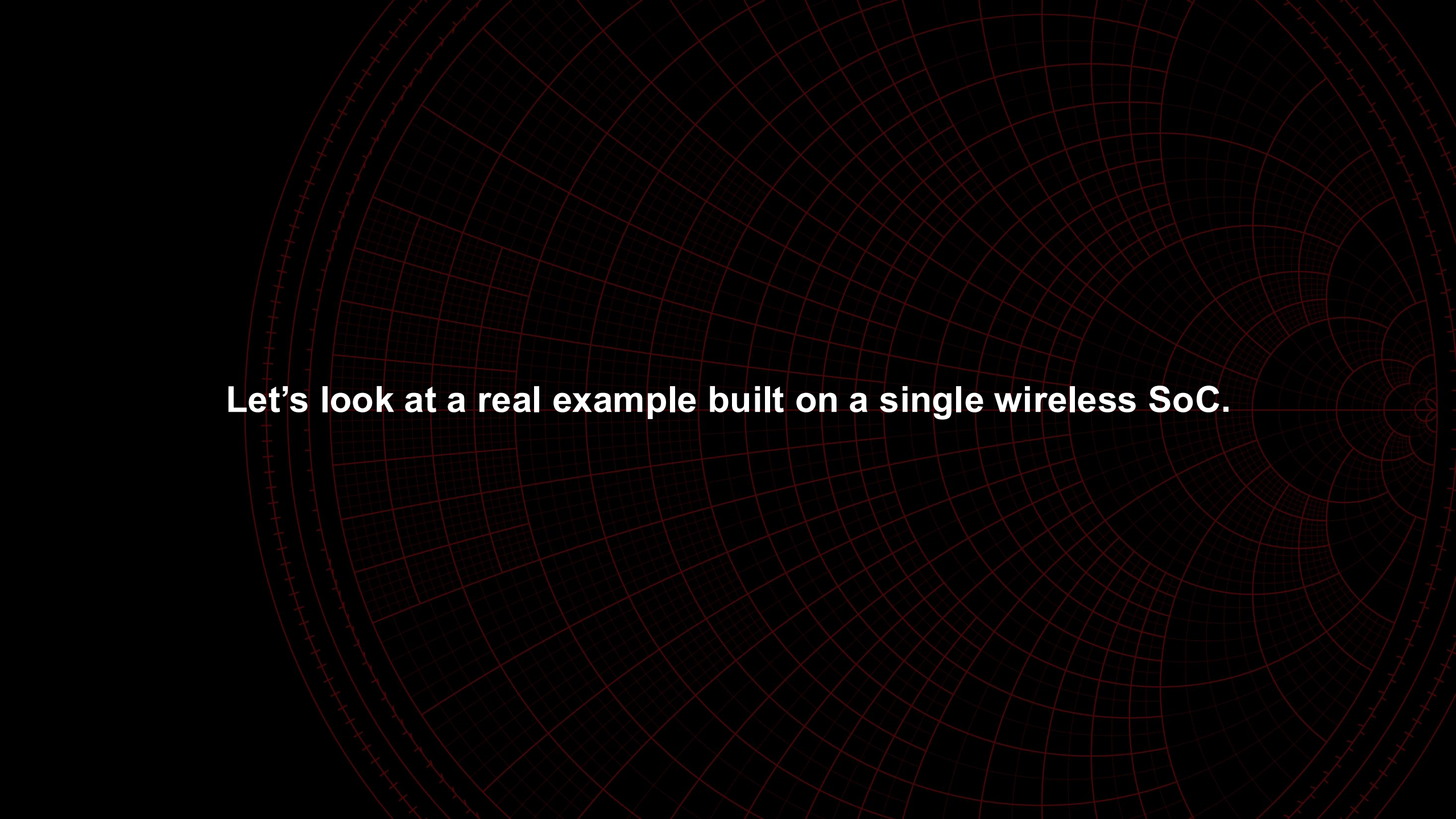
Single platform for:

- **Connectivity**

Integrated wireless communication

- **Intelligence**

On-device processing and AI

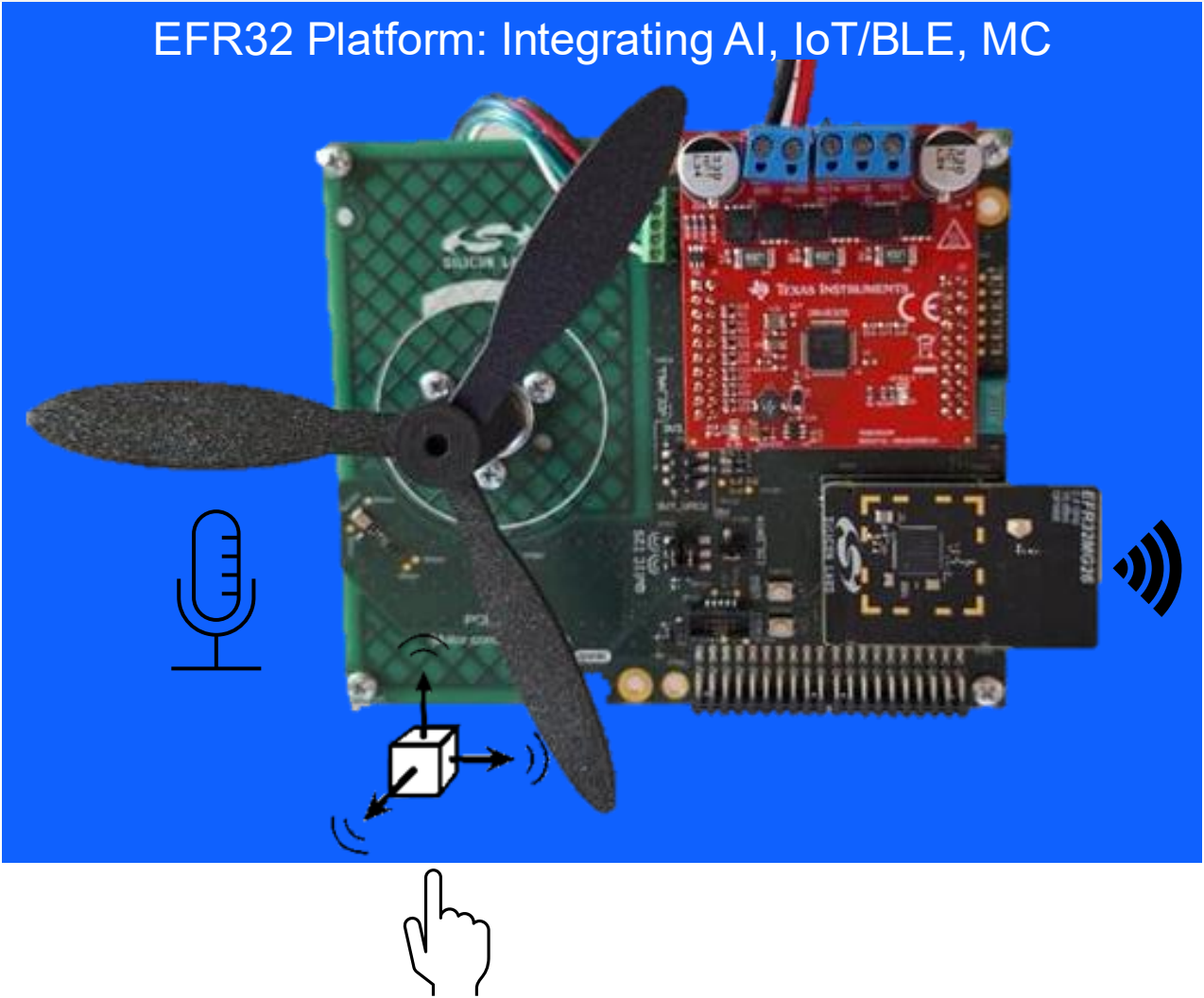


Let's look at a real example built on a single wireless SoC.

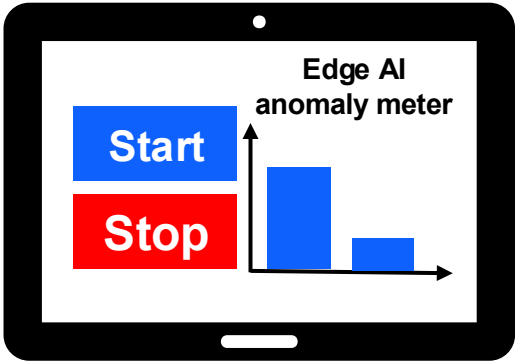
FAN Demo Overview

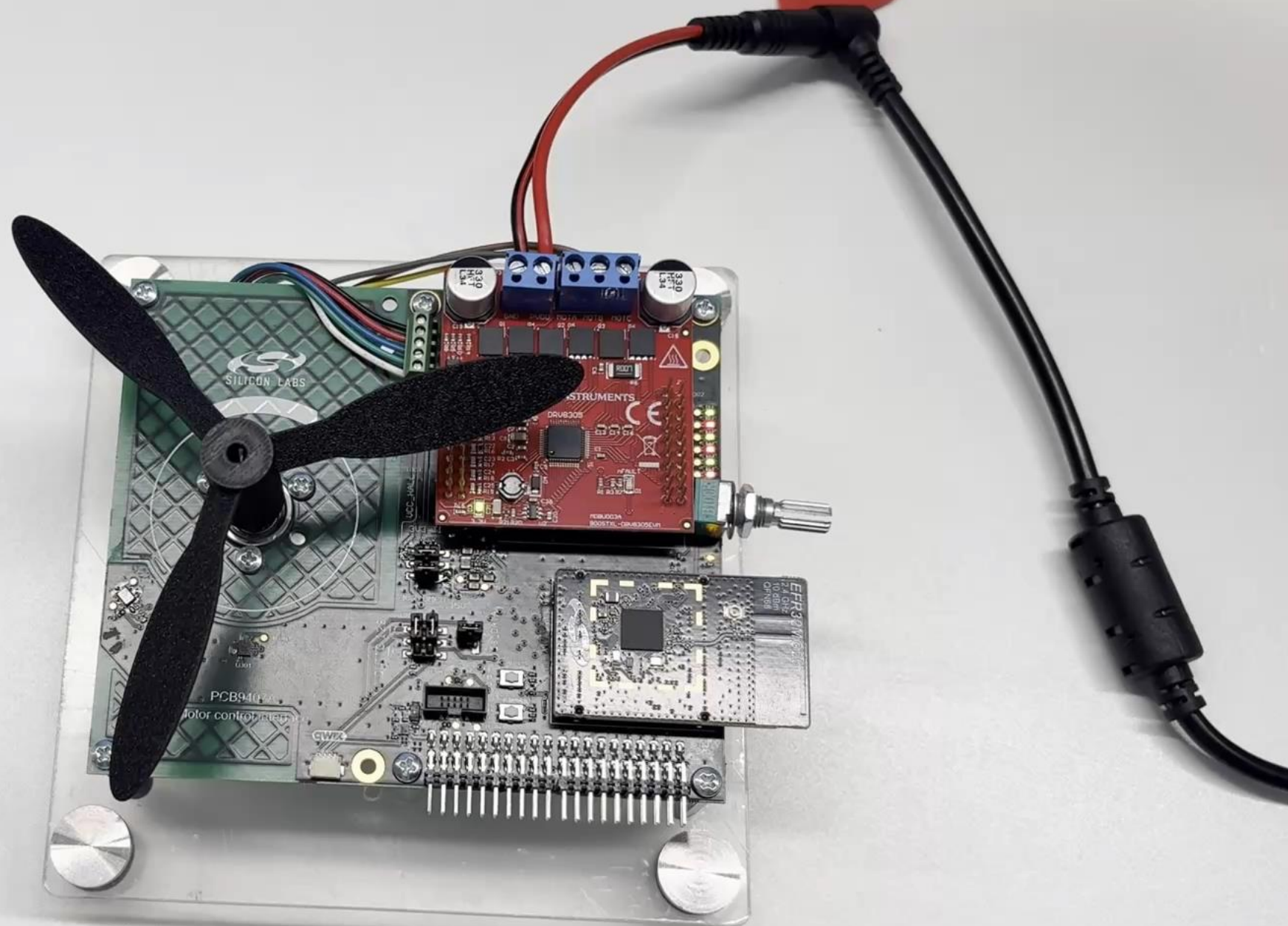
EFR32 Platform: Integrating AI, IoT/BLE, MC

Start fan slow



User Interface





The Next-Generation IoT Node

■ Industry Shift

- **Discrete → Integrated architectures**
 - Multiple components consolidated into a single SoC
 - Tighter hardware-software coupling
- **From sensing & sending → sensing & deciding**
 - Intelligence moves from cloud to the edge
 - Faster response, lower latency
- **Peak performance → performance per watt**
 - Optimization shifts to performance per watt
 - Smarter use of available compute

