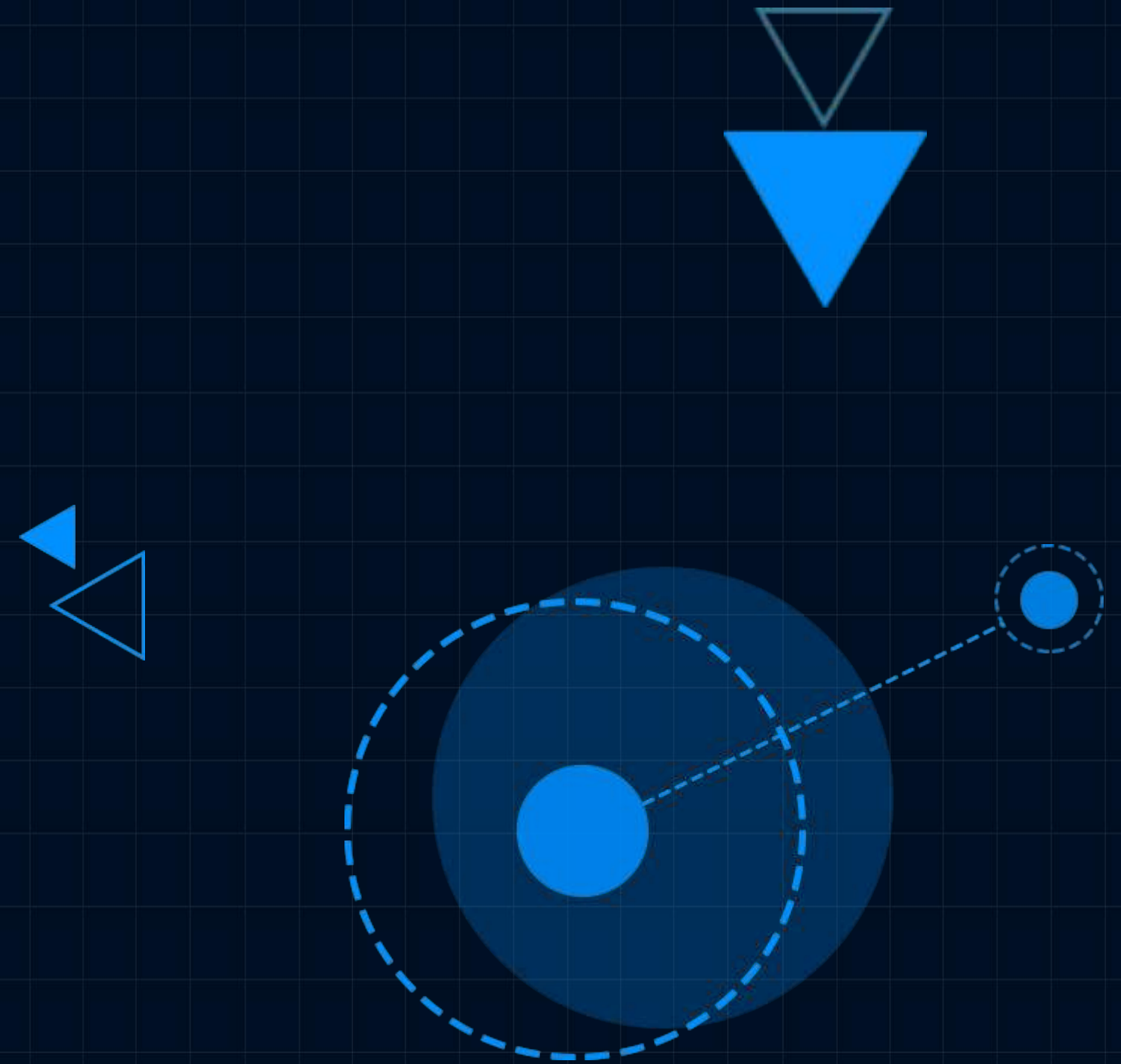


Cloud Firmware in ByteDance

演讲人

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袁 帅 字节跳动系统部STE团队



Agenda

01 CloudFW

02 Min Platform

03 coreboot

04 LinuxBoot

Agenda

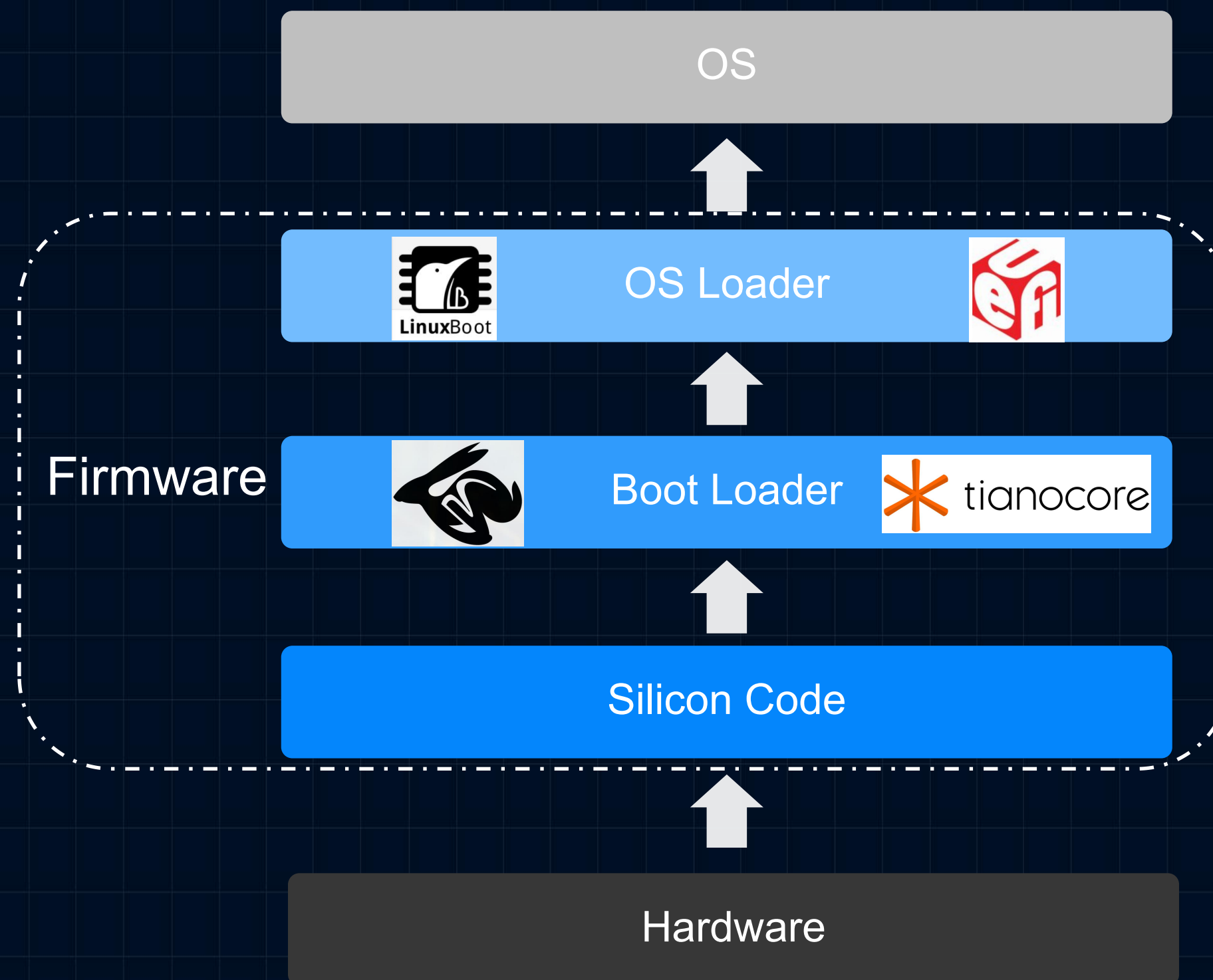
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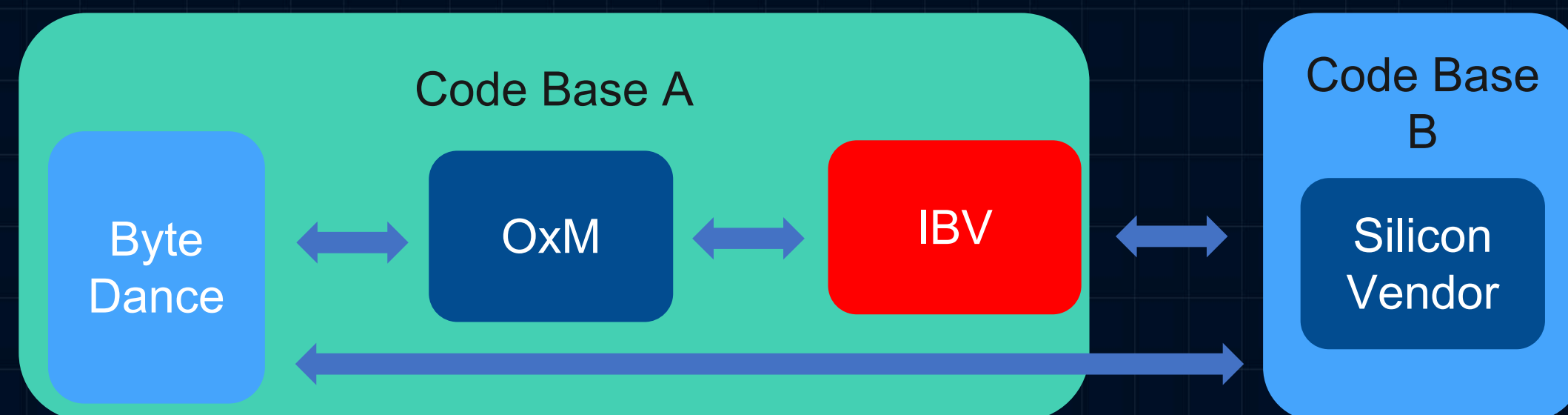
Firmware Components



Is UEFI/Tiano good firmware solution right now?
Do we need others?

Tiano/UEFI Firmware Defects

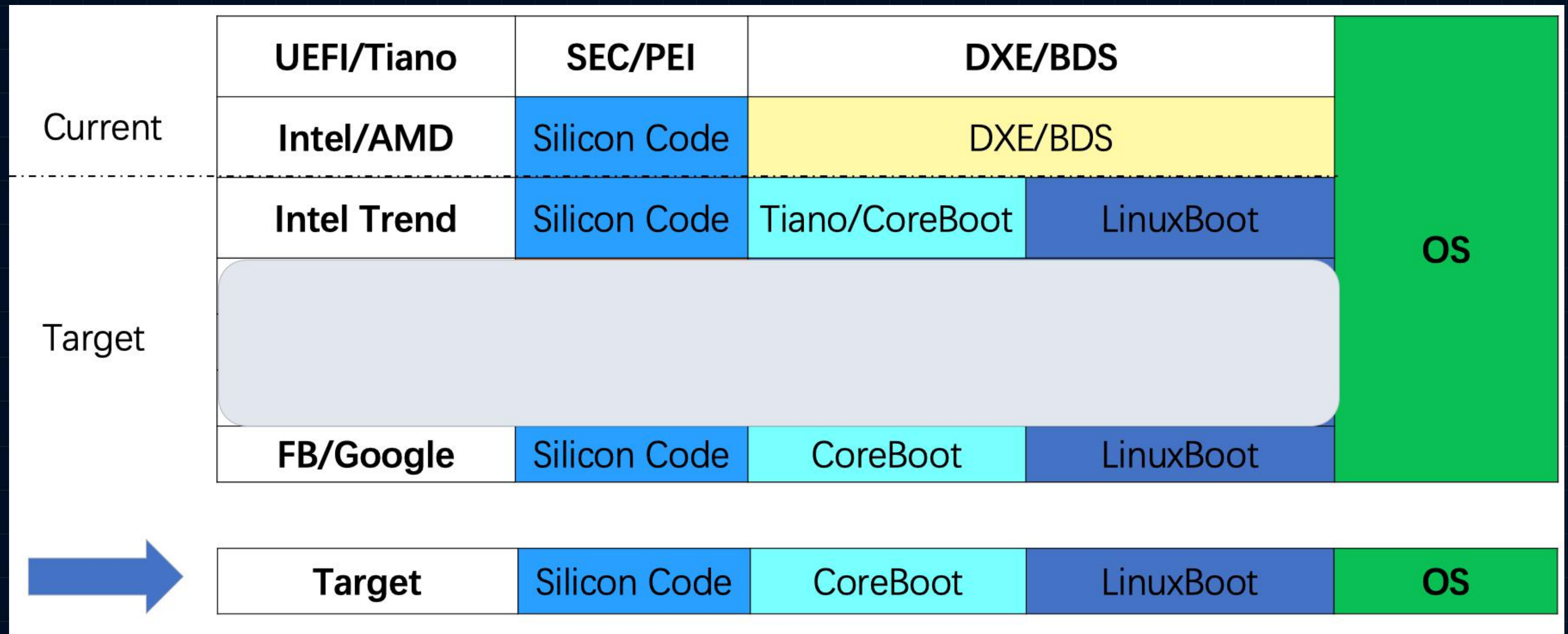
- Comparing Linux community, UEFI community is NOT active
- Can't fix UEFI issue immediately since some key modules are controlled by IBV
- Working Model is NOT efficient.



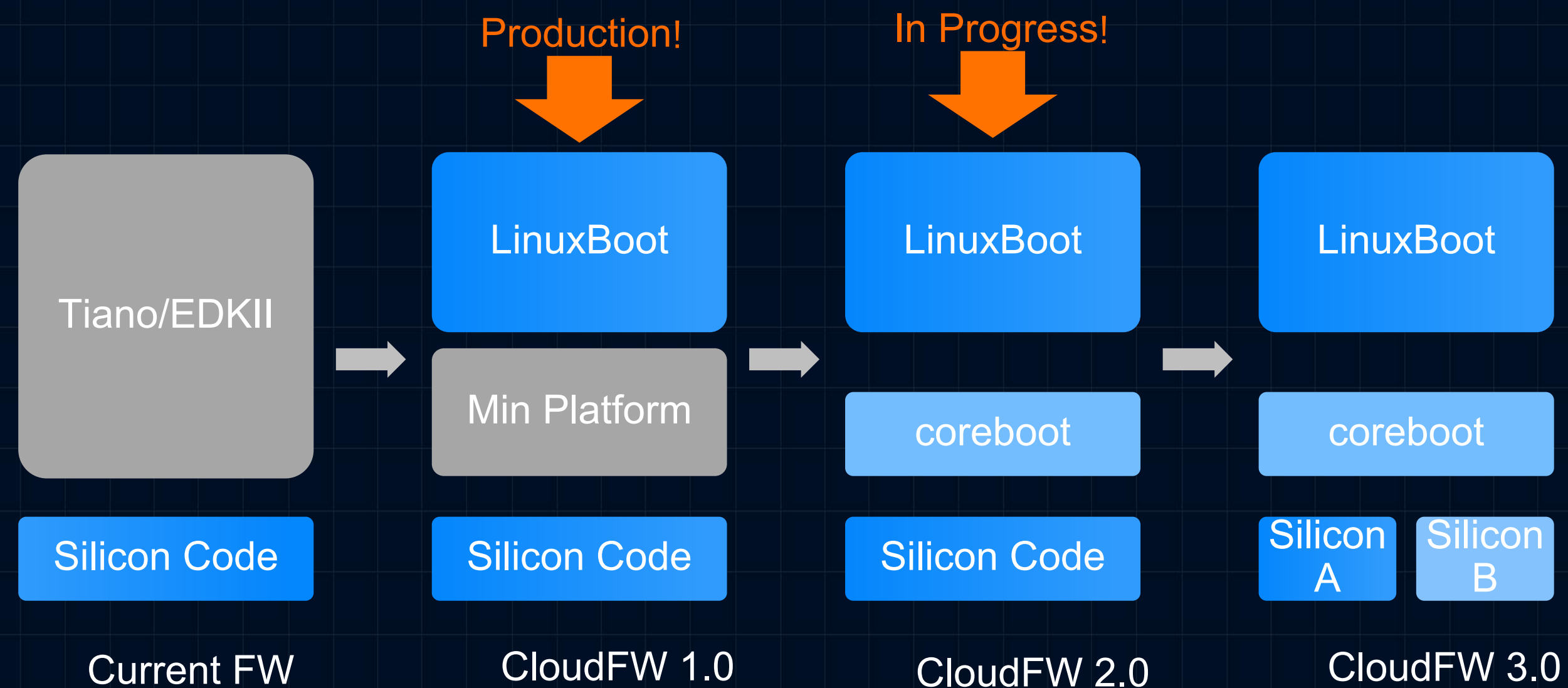
Hardware got huge improvement:

- More Cores
- More memory
- More Flash Size
- High Frequency
- ...

Firmware Eco-system



ByteDance Cloud FW Roadmap



	CloudFW 1.0	CloudFW 2.0	CloudFW 3.0
OS Loader	LinuxBoot	LinuxBoot	LinuxBoot
Bootloader	Min Platform	coreboot	coreboot
Silicon Code	Silicon Code	Silicon Code	Silicon Code A&B

Agenda

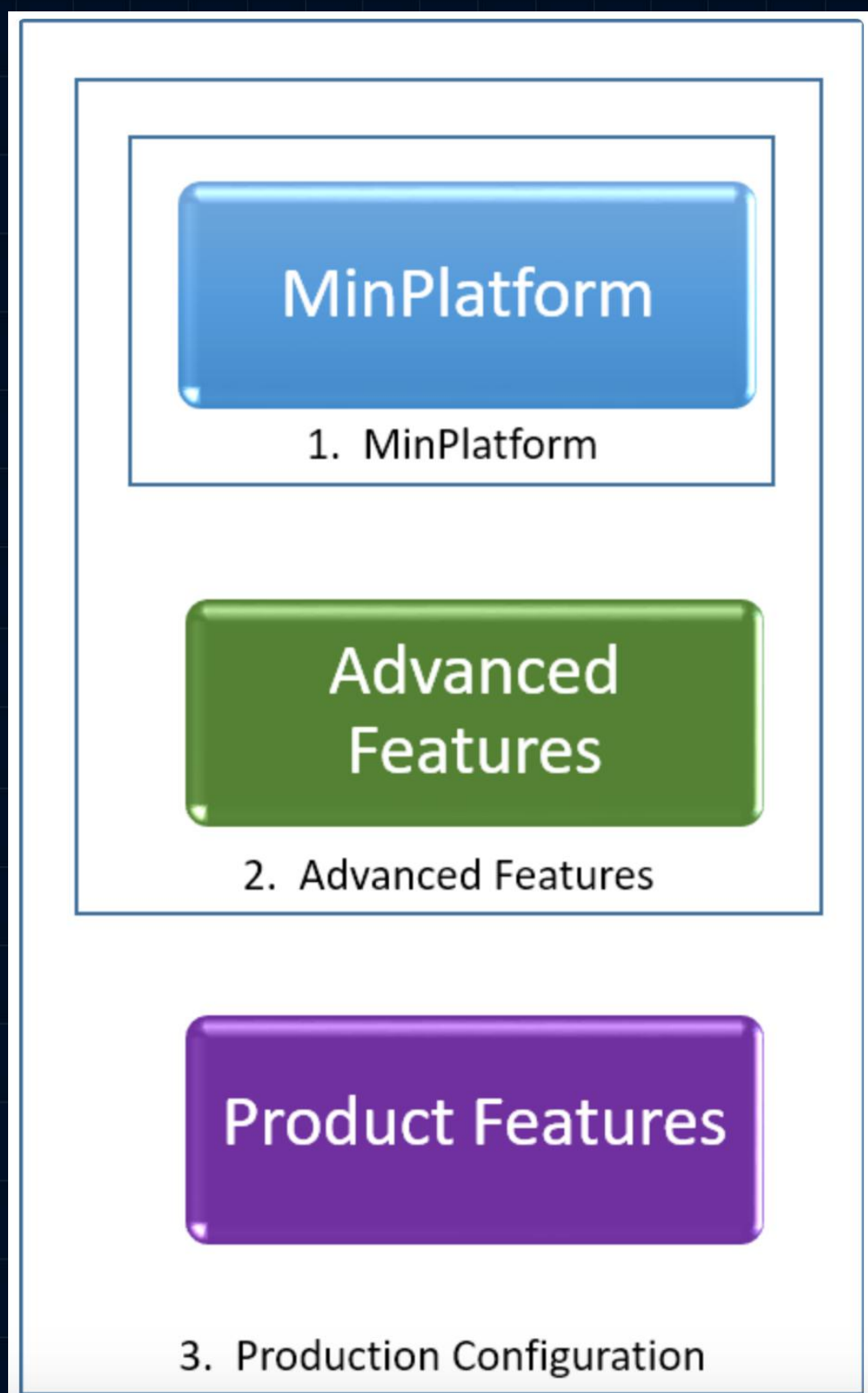
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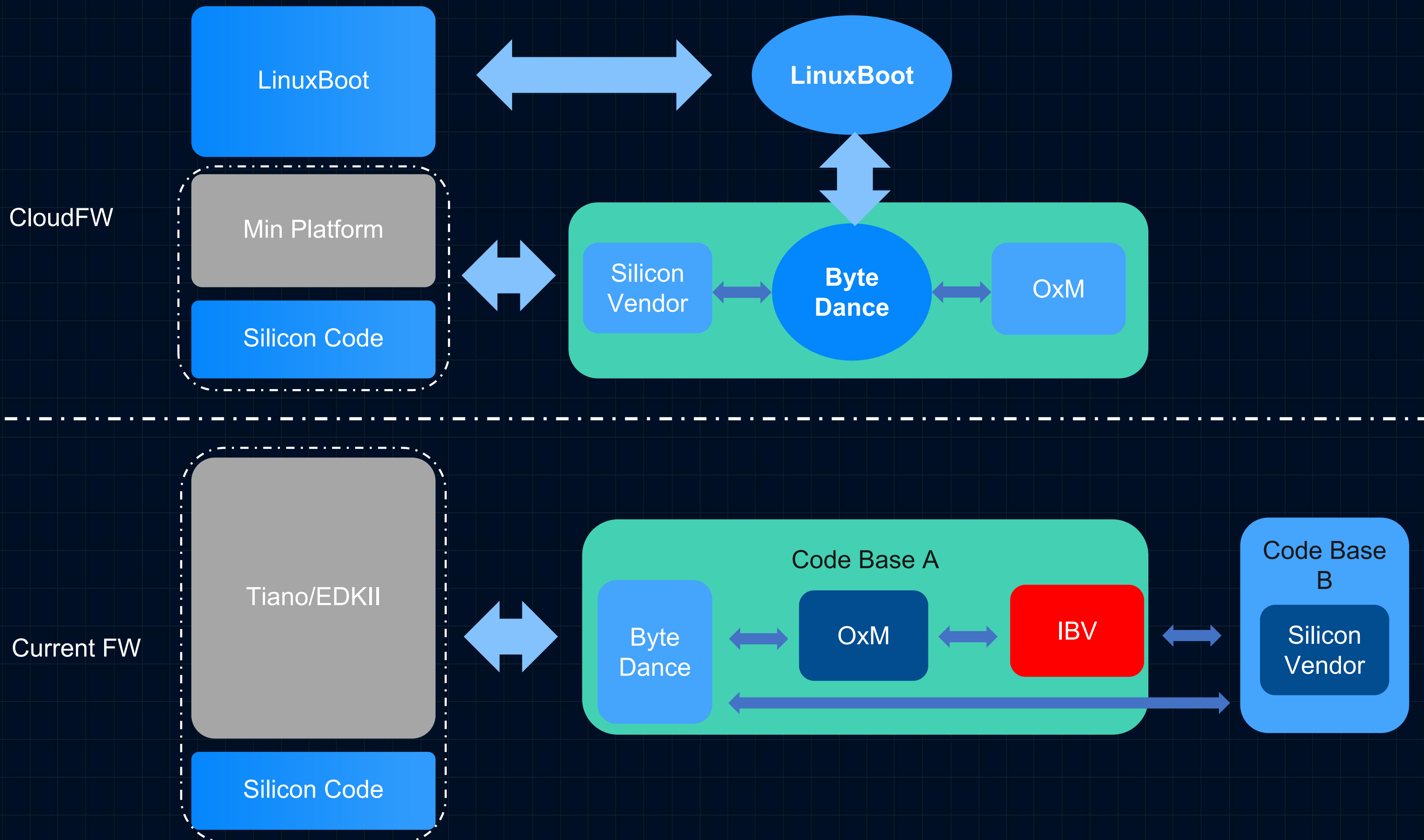
Min Platform



Stage	Functional Objective	Example Capabilities
I	Minimal Debug	Serial port output, source debug enabled, hardware debugger enabled
II	Memory Functional	Basic hardware initialization necessary to reach memory initialization, permanent memory available
III	Boot to UI	Simple console input and output to a UI, UEFI shell
IV	Boot to OS	Boot an operating system with the minimally required features
V	Security Enable	UEFI Secure Boot, TCG measured boot, DMA protections
VI	Advanced Feature Enable	Firmware update, power management, non-essential I/O

<https://github.com/tianocore/edk2-platforms/blob/master/Platform/Intel/Readme.md>
<https://edk2-docs.gitbook.io/edk-ii-minimum-platform-specification/>

Min Platform Working Model



Agenda

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coreboot

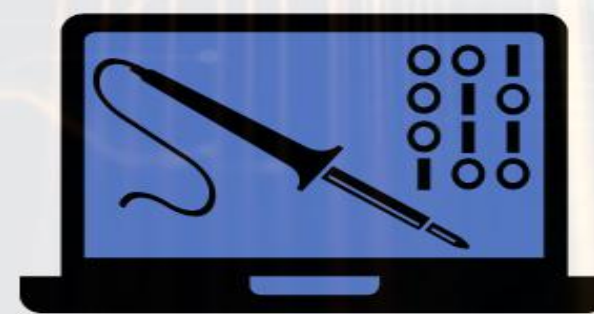


News	Calendar	Documents	Gerrit	Downloads
Job Board	Vendors	Bugtracker	Consulting	Videos

Fast, secure and flexible OpenSource firmware



For End Users



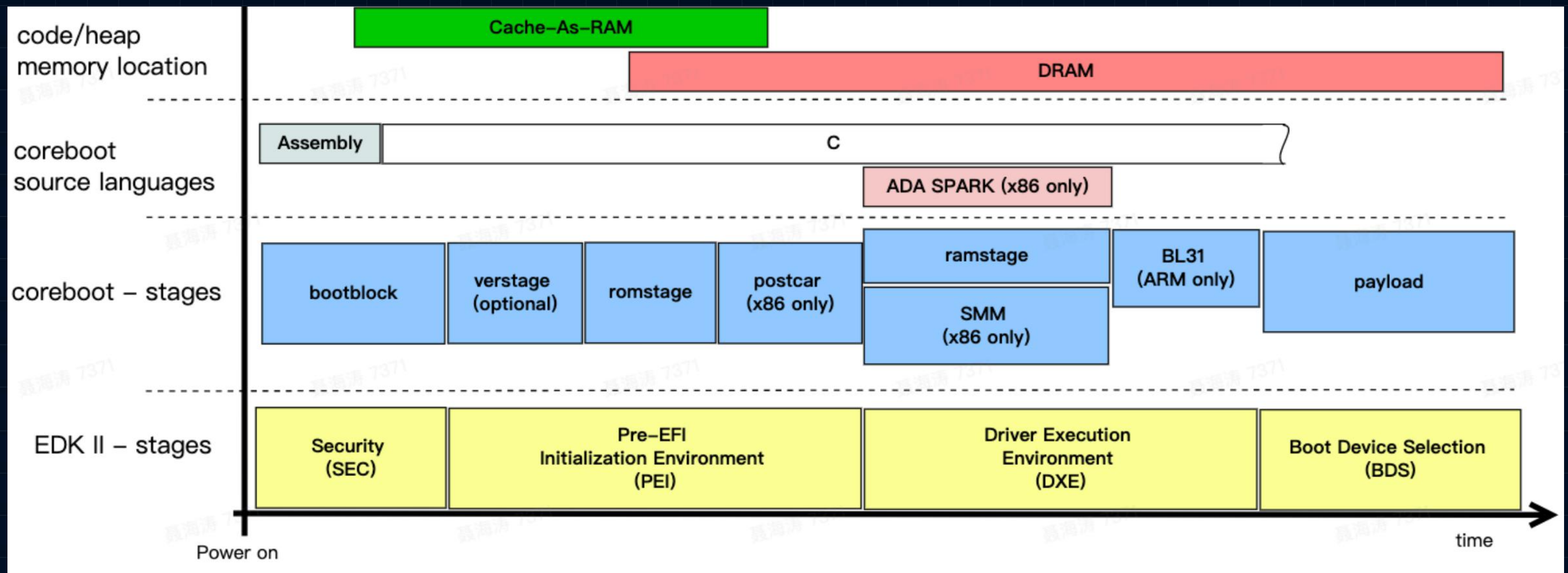
For Developers



For OEMs/ODMs

<https://coreboot.org>

coreboot



1. Bootblock: Set up for a C-environment
2. Romstage: Early device init、DRAM init
3. Postcar: Leave CAR and run code from DRAM、load Ramstage
4. Ramstage: Main device init (PCI、On-chip device、TPM、Graphics ...)
5. Payload: Firmware store SW (LinuxBoot、SeaBIOS、Tianocore ...)

Agenda

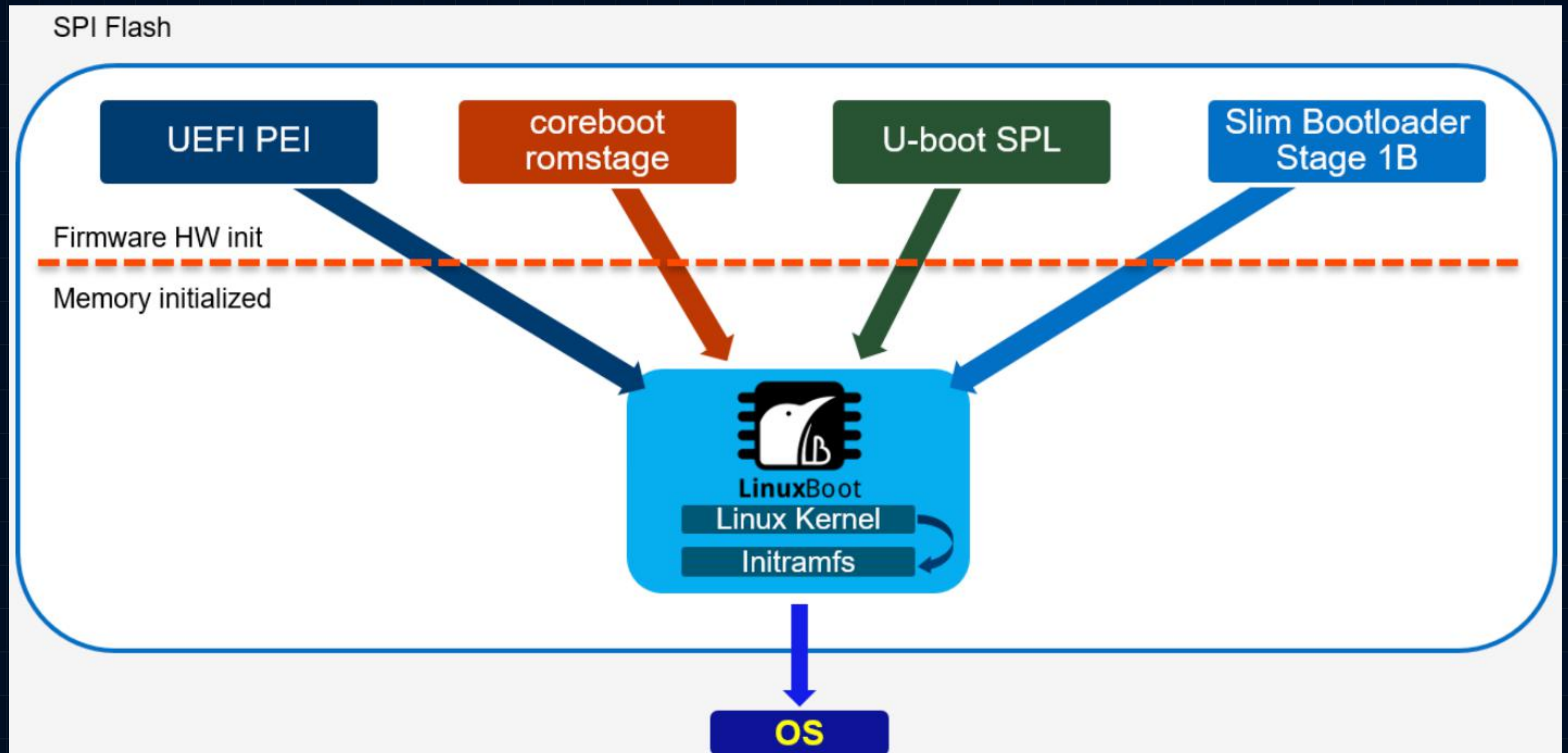
01 CloudFW

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LinuxBoot



<https://www.linuxboot.org/>

LinuxBoot Content



Kernel	https://github.com/linuxboot/linux
u-root	https://github.com/u-root/
Drivers	Network etc
Application	Customization

Replace and Enhance Firmware Functions:

- PXE、HTTP boot
- Boot Option Manager
- Redfish
- ...

Provide a Diskless Linux Environment:

- Operation&Maintenance components
- System Stress Tools
- ...

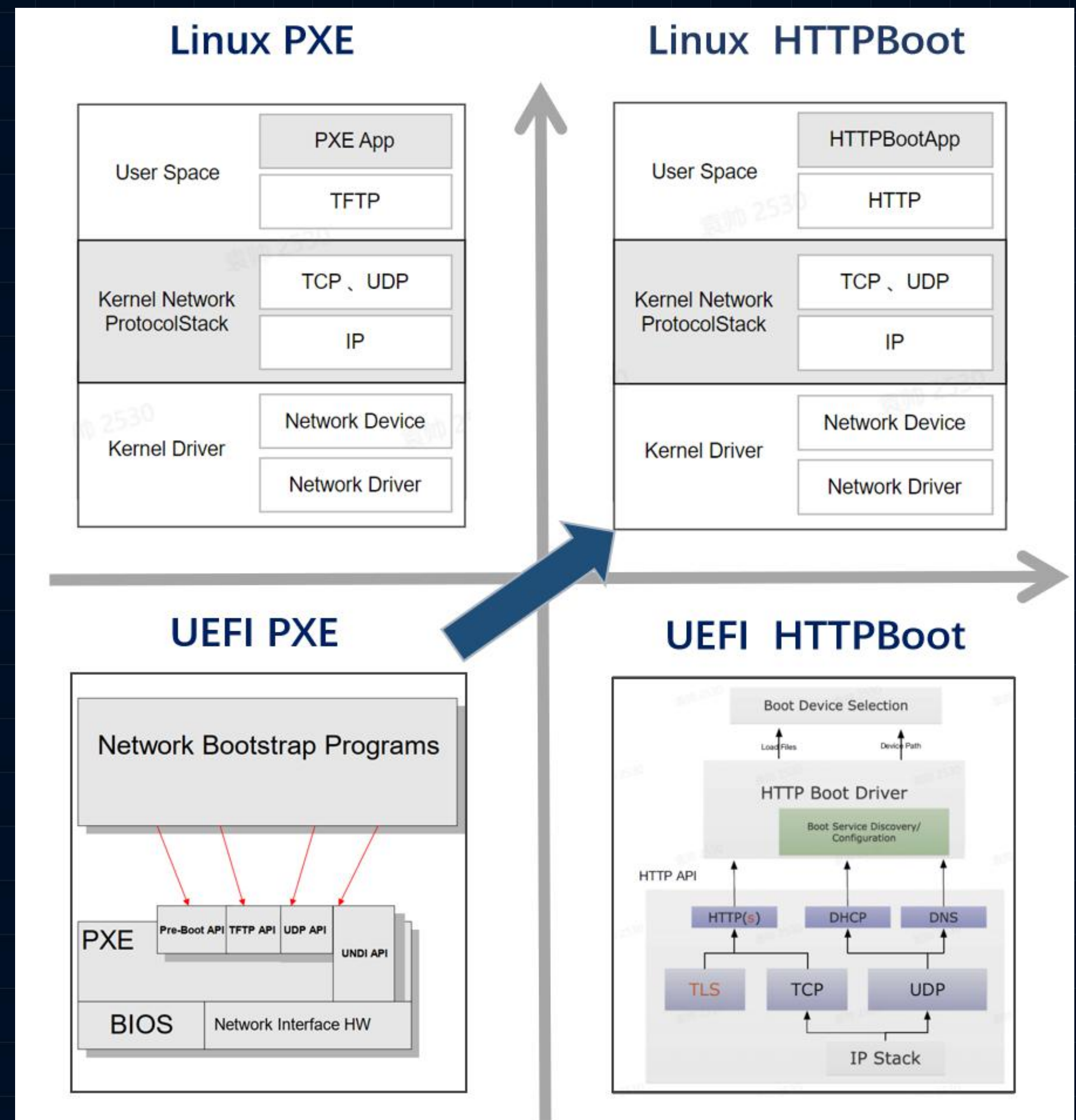
Key Example in LinuxBoot

UEFI Disadvantage

- UEFI network stack is not powerful
- Hard to optimize
- ...

LinuxBoot Advantage

- Linux Network Stack is powerful
- Independent of firmware vendor
- More Linux network experts



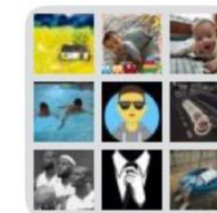
Summary

	UEFI/Tiano	Min Platform	LinuxBoot	CoreBoot
Eco-system				
community				
Boot time				
Difficulty				

- ByteDance has launched Cloud Firmware 1.0;
- ByteDance is working on Cloud Firmware 2.0 Solution.

Looking forward to seeing more companies collaboration in New Firmware Eco-system!

Q&A



字节跳动 STE 团队技术交流



该二维码 7 天内 (10 月 27 日前) 有效, 重新进入将更新

Thanks

