
Aston Li 李柏穎

CONTENTS

SELF INTRODUCTION

- 8+ years of experience in embedded system firmware development
- 6+ years of experience in verifying FPGA/SoC features via firmware
  - Frequent communication and collaboration with ASIC designers required
- From the low level
  - BootROM, boot loader, low-level driver
- At the mid-to-high level
  - data transmission (between different devices)
  - IoT module functions, fingerprint sensor, library porting, automation
- FT/MP firmware for mass production
- System firmware development in **bare-metal** and **FreeRTOS** environments
- Integrating automated system compilation and testing in the Ubuntu/Linux environment
- Using bash scripts for automation, analyzing results, and optimizing development environments
- Optimized efficiency and power consumption multiple times
- Adept at organizing complex systems
- Attention to detail, identifies practical solutions, and creates improvements

SELF INTRODUCTION

Skills

- Languages
  - ✓ C
  - ✓ Bash
  - ✓ Assembly
- IPs, Applications & Drivers
  - ✓ UART, GPIO, SPI, Timer, ADC
  - ✓ DSP, IRQ, DMA, Bus, PMU
  - ✓ Boot ROM, Bootloader
  - ✓ Bare-metal, FreeRTOS
  - ✓ Optical Fingerprint Sensor
  - ✓ IoT Wi-Fi Module Applications
  - ✓ Command Line Parser
  - ✓ Power Saving mode

Tools

- Debug Tools
  - ✓ ICE
  - ✓ Scope
  - ✓ Logic Analyzer
- Code Editors
  - ✓ Vim
  - ✓ Source Insight
  - ✓ Meld
- Version Control
  - ✓ Git, GitLab
  - ✓ SVN
- Synopsys HAPS
- Cadence Palladium

WORK EXPERIENCE

2021/04 – 2023/02 company closure

Blue Ocean (Deep Ocean) Smart System

AI Framework Dept - Senior Engineer

AI SoC, GPGPU/HPC

- Implement a middle layer in a multi-chiplet system
  - data transmission, device operations, and RPC interface
- Perform inference performance analysis (profiling)
- Build and configure CMake, dependencies, and environments for multiple repositories, various architectures
- Develop and maintain build processes for daily builds, auto-testing, and releasing SDK

WORK EXPERIENCE

2019/05 – 2021/04

Igis Technology 神亞科技

System Design Dept - Senior Engineer

In-display fingerprint sensor IC

- Optical Fingerprint Sensor Driver, ROI, and Binning
- Low-level Driver Development and FPGA/SoC Verification
  - UART, GPIO, Interrupt, Timer, TCON, SPI slave
  - DSP, DMA, System Bus, PMU, ADC, WFI, Power Saving mode
- Porting FreeRTOS, BootROM, Security Update
- Implement Command Line Interface (UART) for testing and debugging

2017/09 – 2019/04

Phison Electronics 群聯電子

Chip R&D Dept - Firmware Engineer

NAND Flash Controller IC

- Low-level Driver Development
- FPGA/SoC Verification (Digital)
  - NAND Flash IP, Error Handling(Raid)
  - Coprocessor Communication between ARM R5 and Andes N8

WORK EXPERIENCE

2015/03 – 2017/08

Montage Technology 瀾起科技

Software Dept - Software Engineer

Wifi SoC module for IoT

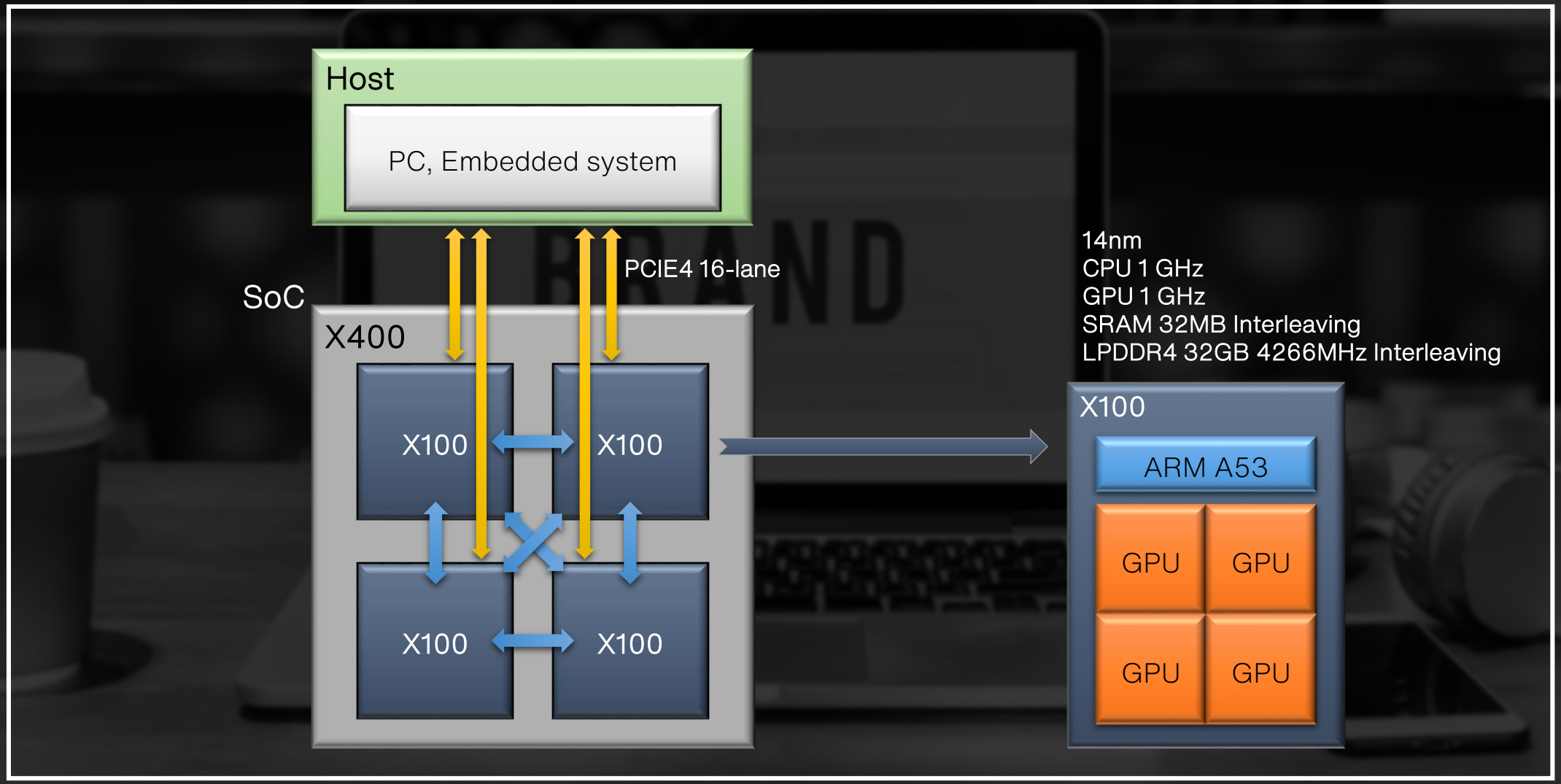
- **Employee of the Year 2016 (sole winner in Taiwan)**
- Low-level Driver Development and FPGA/SoC Features Verification
  - GPIO, PWM, UART, Timer, PMU, Interrupt, OTP
- Implement IoT Applications (SDK) using FreeRTOS
  - Transparent mode (Wifi-to-serial bidirectional transmission)
  - AWS IoT Server Connection Applications
  - OTA update, Power Saving Mode
- Test Firmware - FT and Module Mass Production

SYSTEM ARCHITECTURAL DIAGRAM

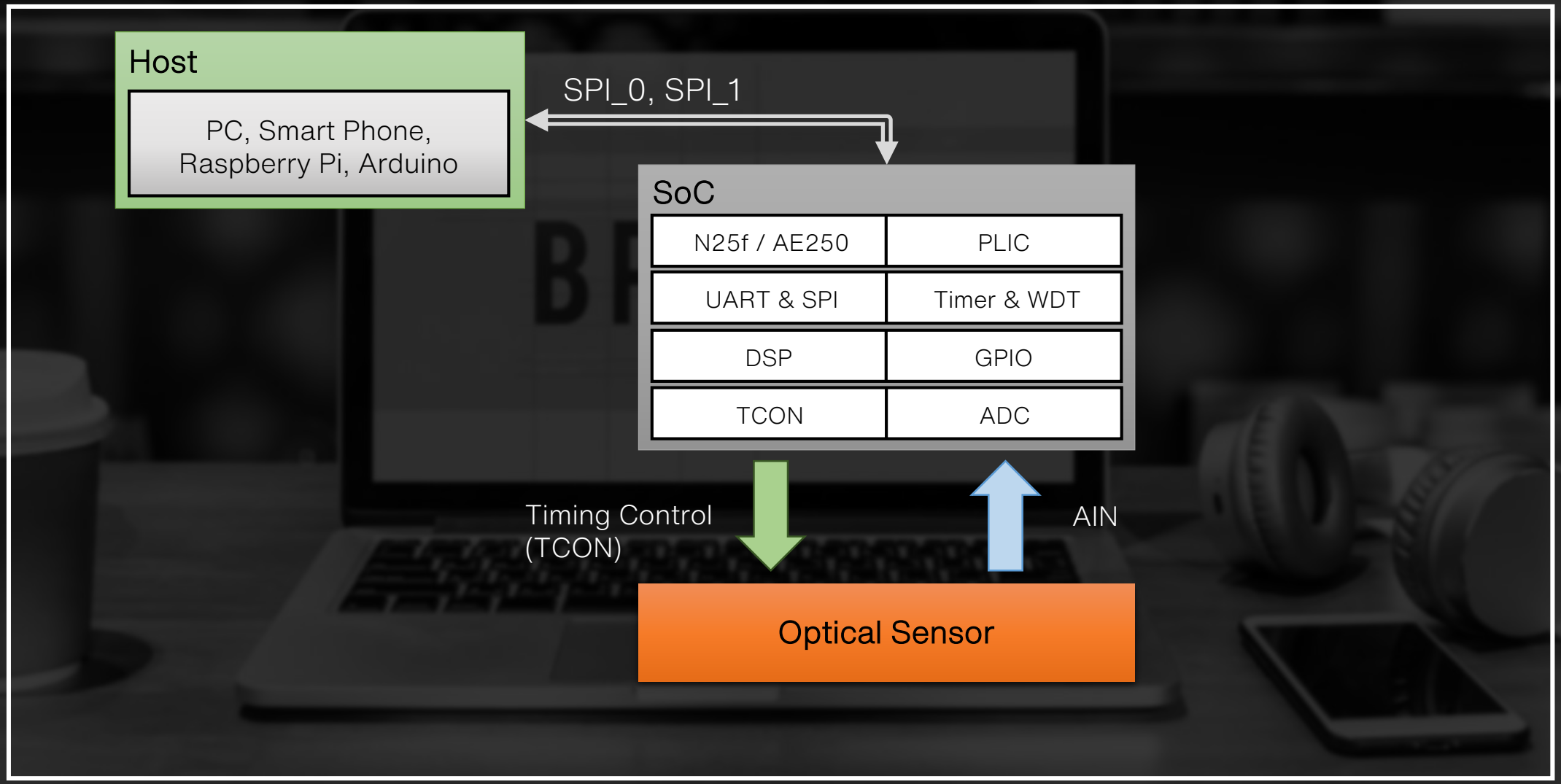
System Architectural Diagram

1. Chiplet-Based AI SoC data transmission
2. Fingerprint Capture
3. Wi-Fi Module Boot Flow
4. Mass Production Test
5. Coprocessor Architecture

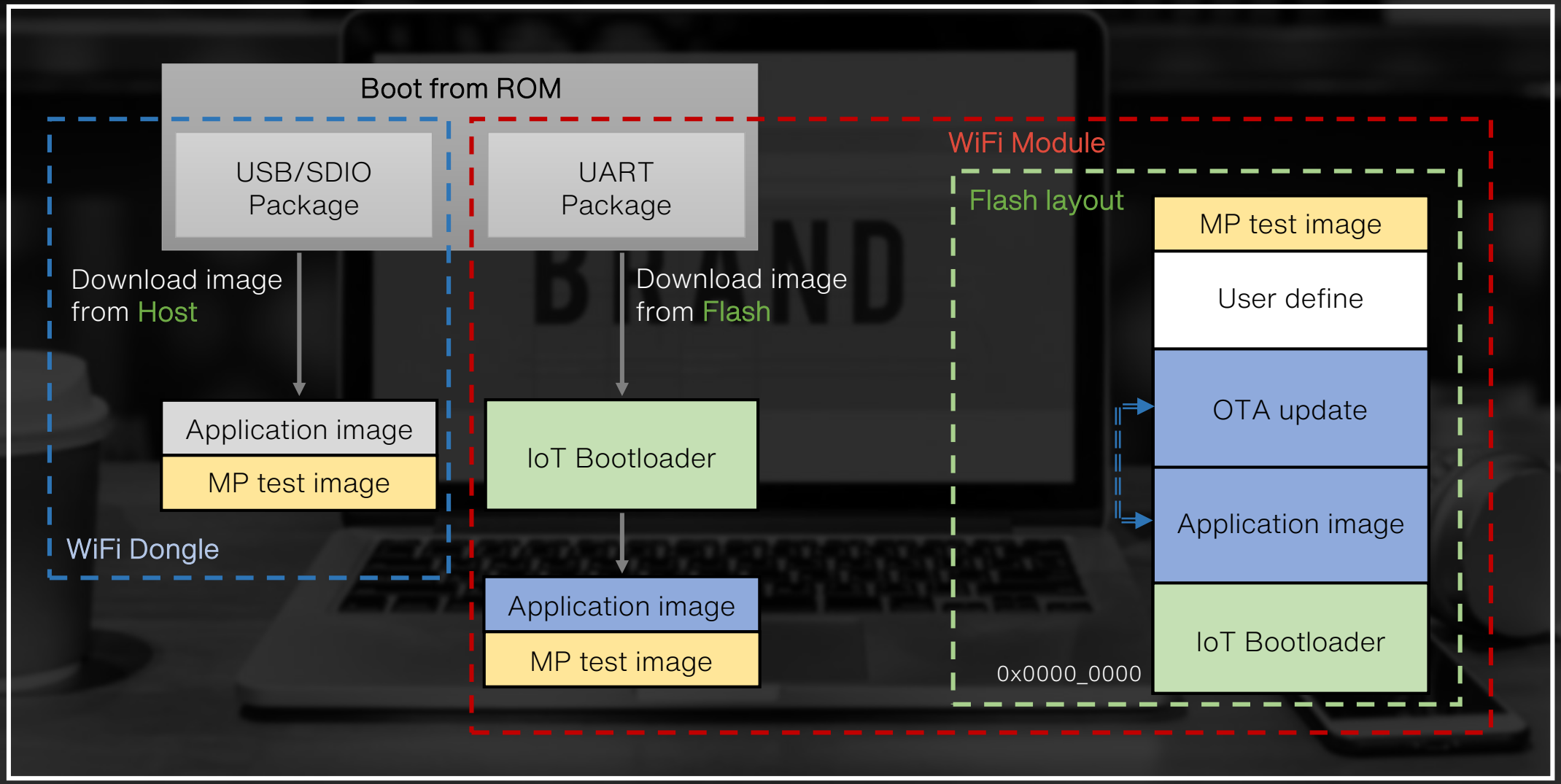
Chiplet-Based AI SoC data transmission



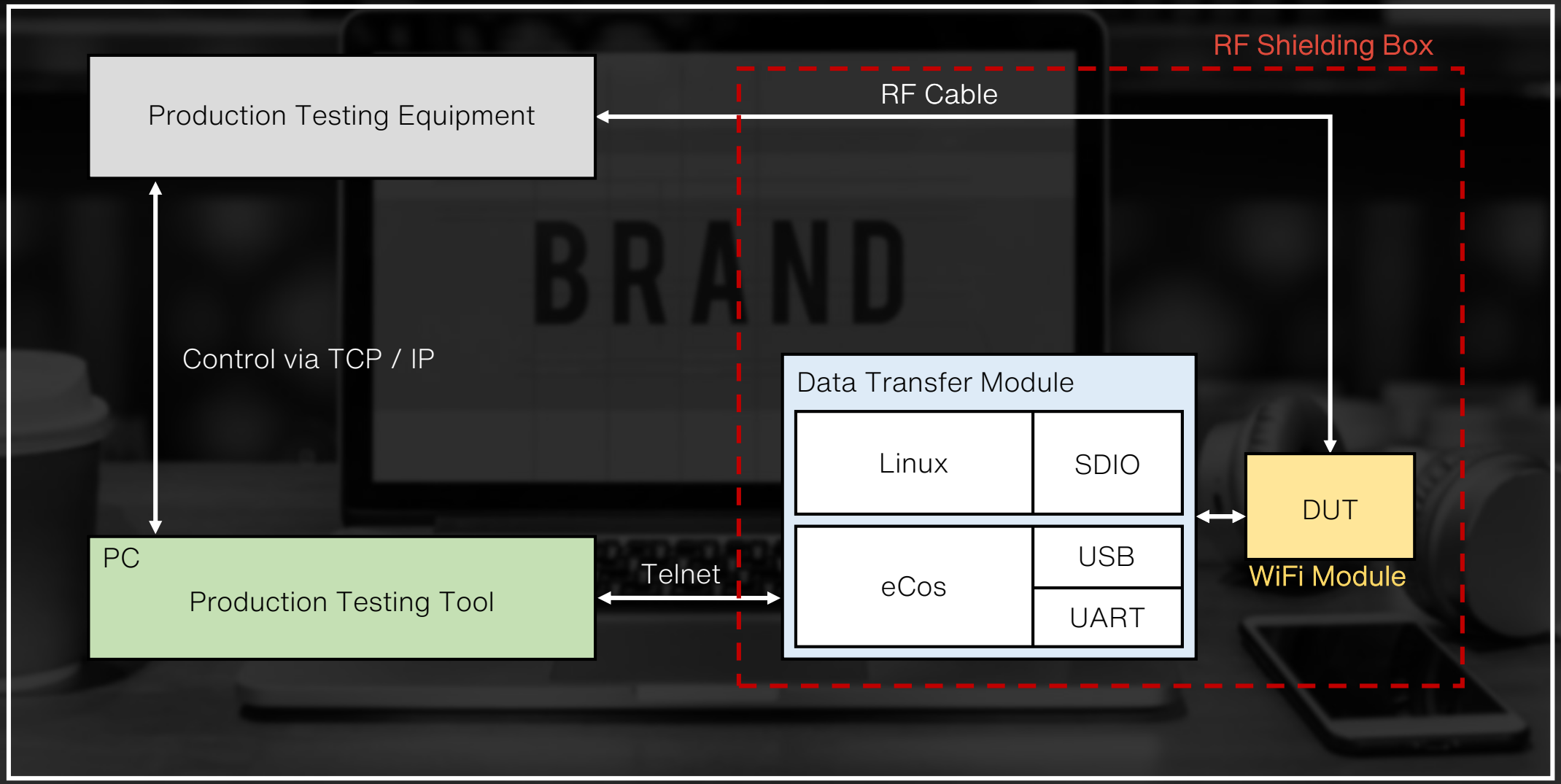
Fingerprint Capture



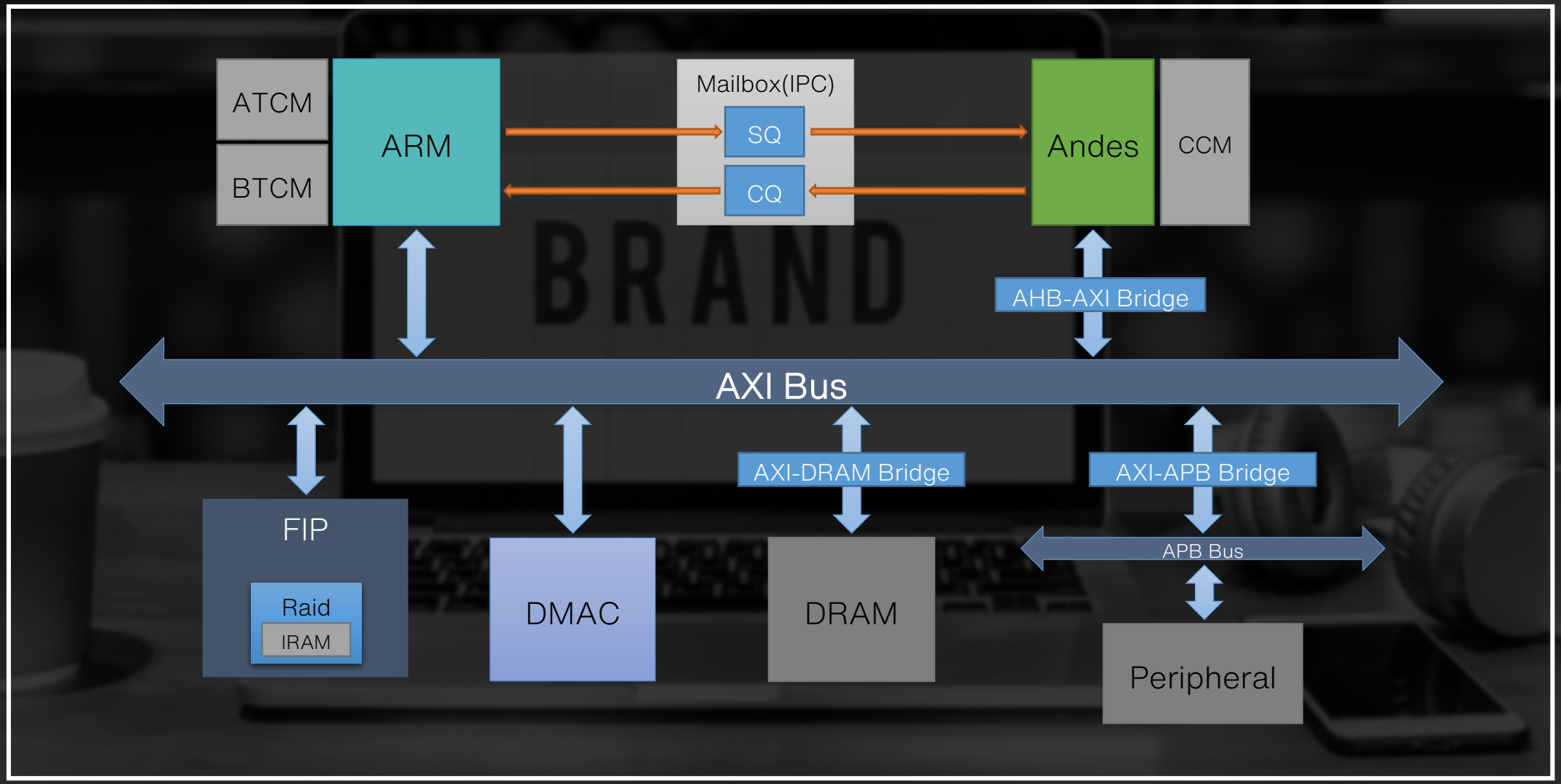
Wi-Fi Module Boot Flow



Mass Production Test



Coprocessor Architecture




Thank You