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Connect to Protect

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Exploring the Foundations of Mobile Trust

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#RSAC

Atredis Partners

- Security Consulting Driven by Applied Research
- Speakers:
  - Josh Thomas
  - Charles Holmes
- The slides will be available for download:
  - www.atredis.com/RSA2016.pdf

Focus

A High Level Talk About Low Level Bugs

… or …

A Low Level Talk About High Level Bugs

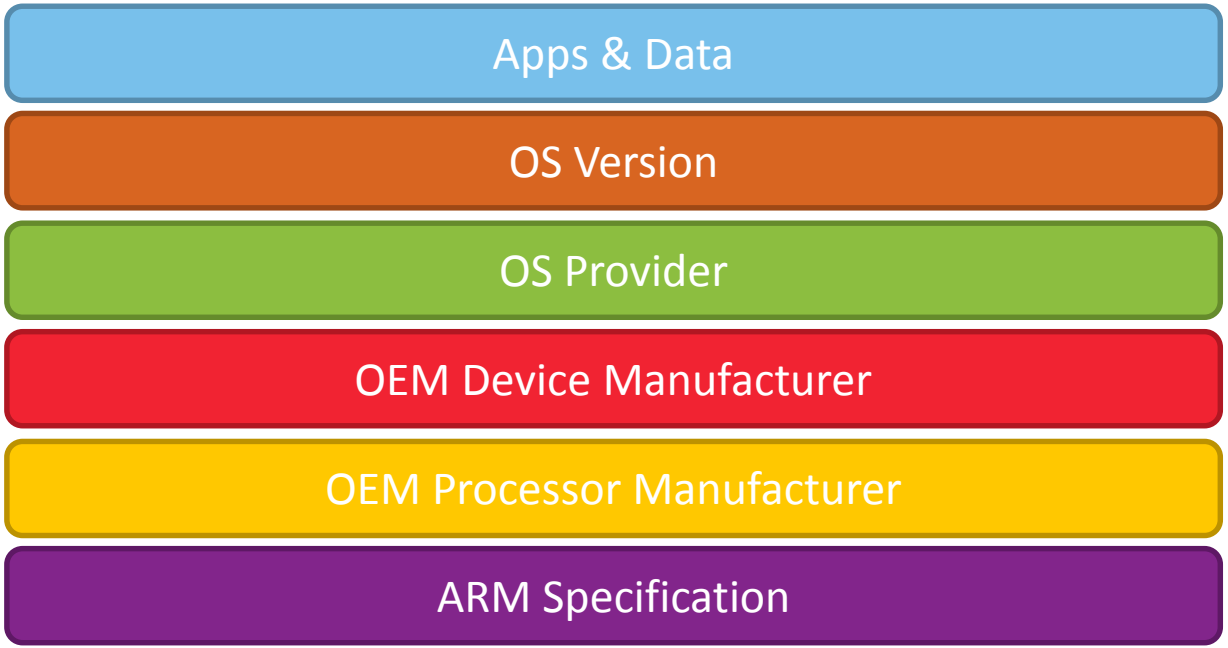
Flow of this talk

- Foundational Introduction
- Market Share:
  - OS / OEM / Processors and SoCs
- Impacts of Problems at the Hardware Layer
  - The last 18 months of issues
  - The last 18 months of impacts
- Take Away and Planning Forward

What is Mobile Trust?

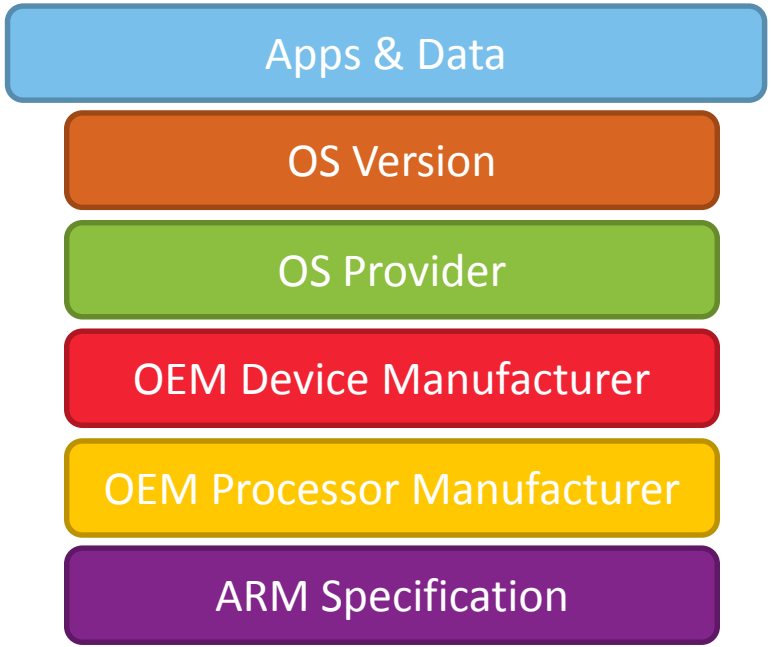
- Realistic Ability to Secure Data
- Realistic Ability to Validate Environment

Foundations of Mobile Trust



What Is Expected in a Talk about Mobile

Common Talking Points: Data

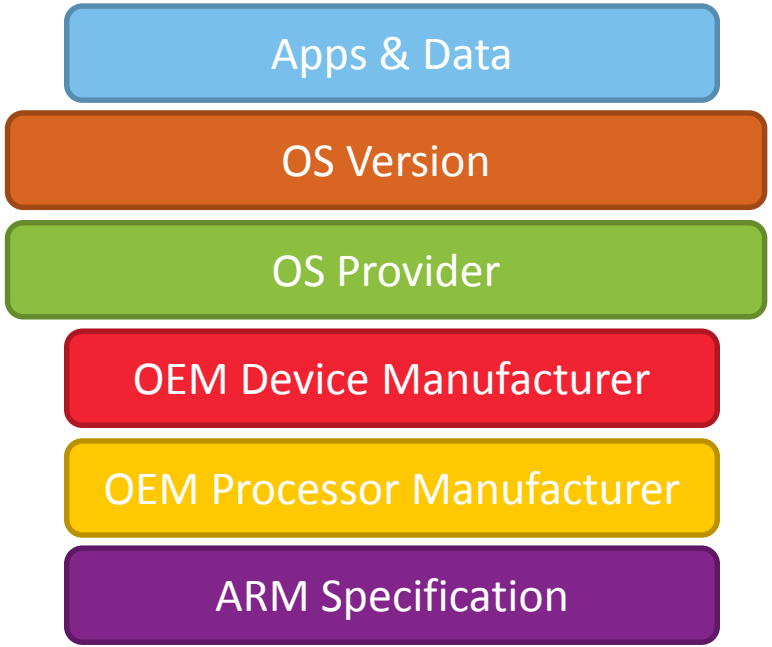


- Data
  - Protected by App or OS
- App
  - Written for OS and OS version
  - Moderated by Platform App Store
  - Constrained by Platform API

Aside about BOYD & MDM

- Based on the Lowest Common Denominator of Security Assumptions
- Written for Cross Platform Use
- Rarely take advantage of OS or Hardware Security Capabilities

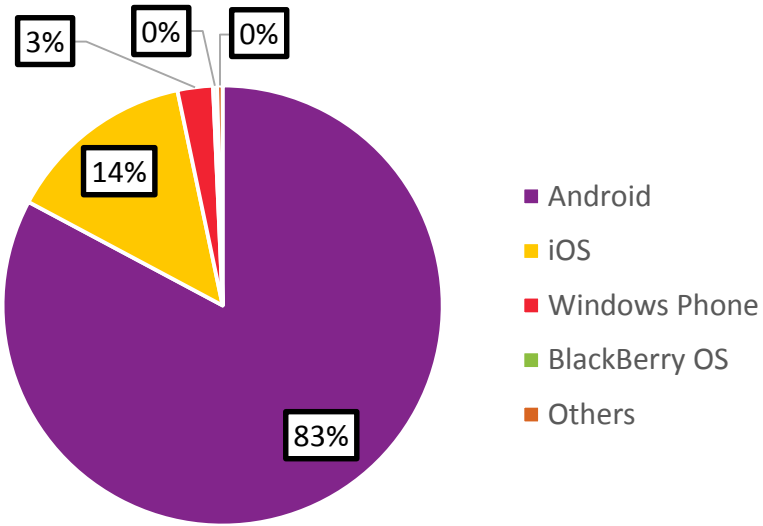
Common Talking Points: OS & OS Version



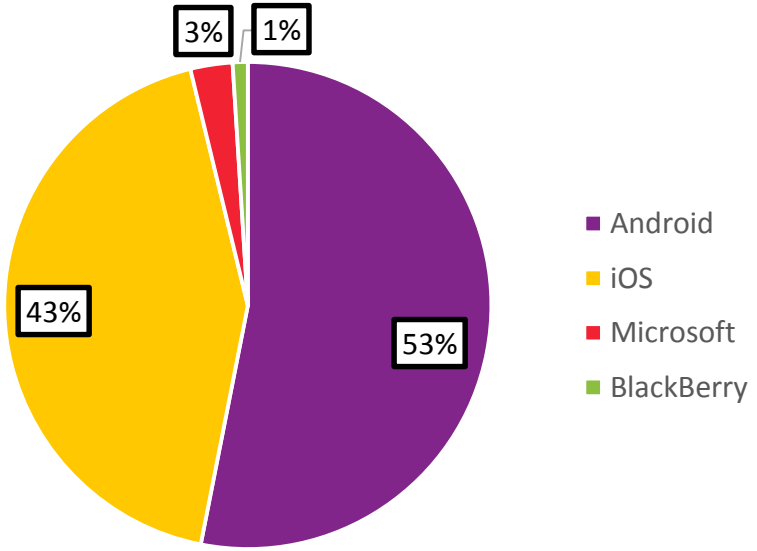
- OS Version
  - Incremental Approach to Security
  - Incremental Approach to Functionality
- OS
  - Fundamental Approach to Security
  - Fundamental Approach to Functionality

OS Market Share

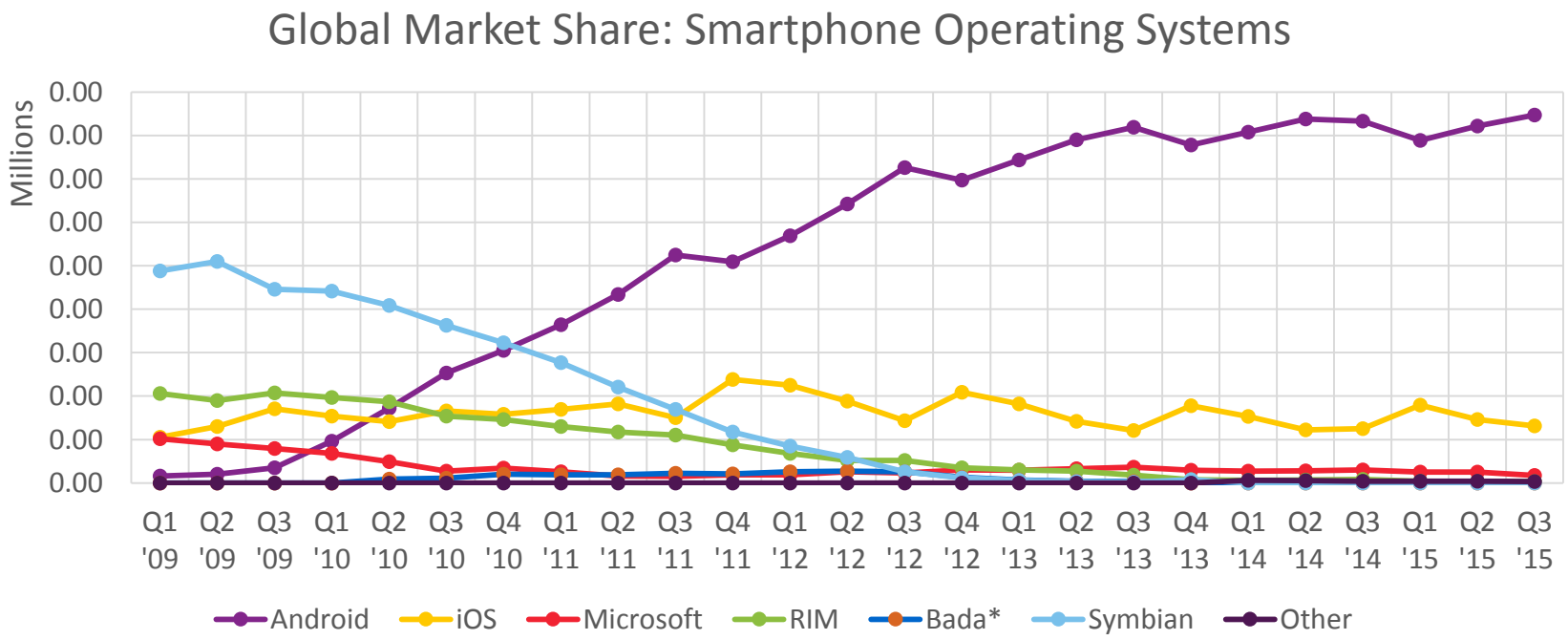
OS Global Market Share (2015 Q2)



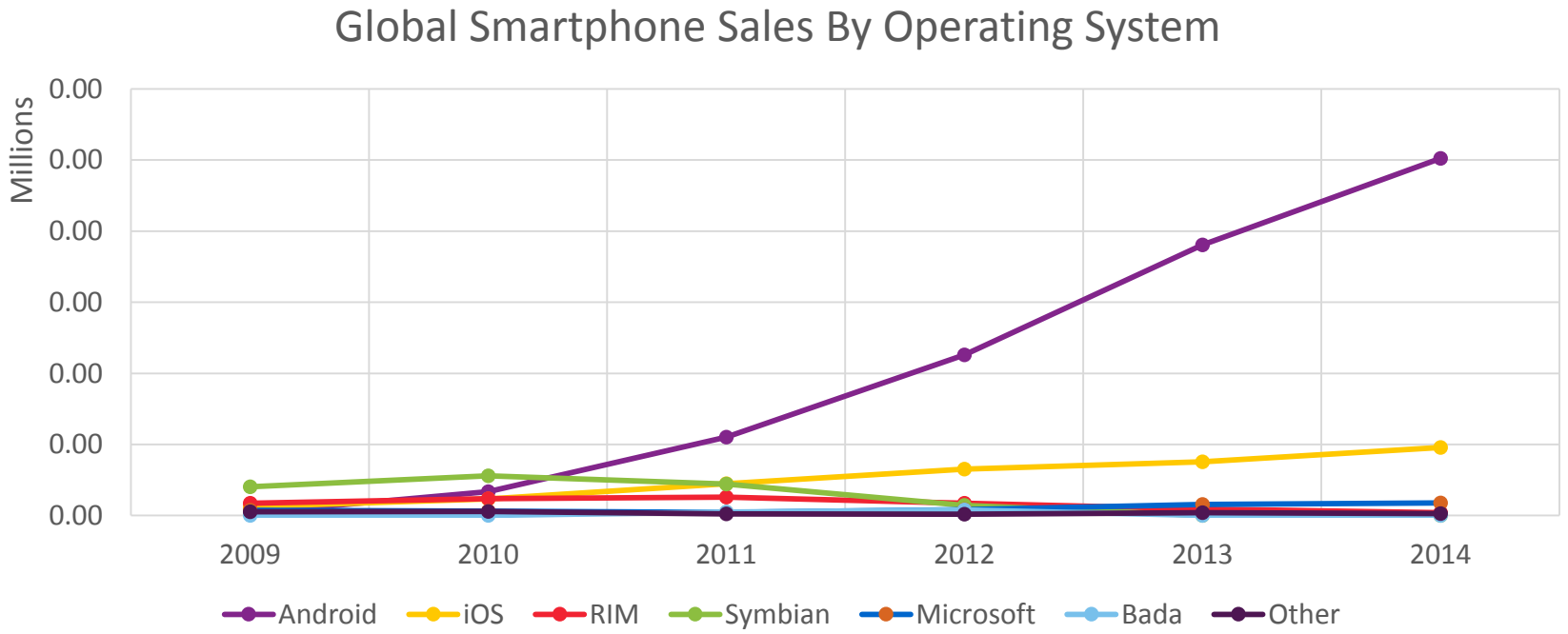
OS US Market Share (2015 Q3)



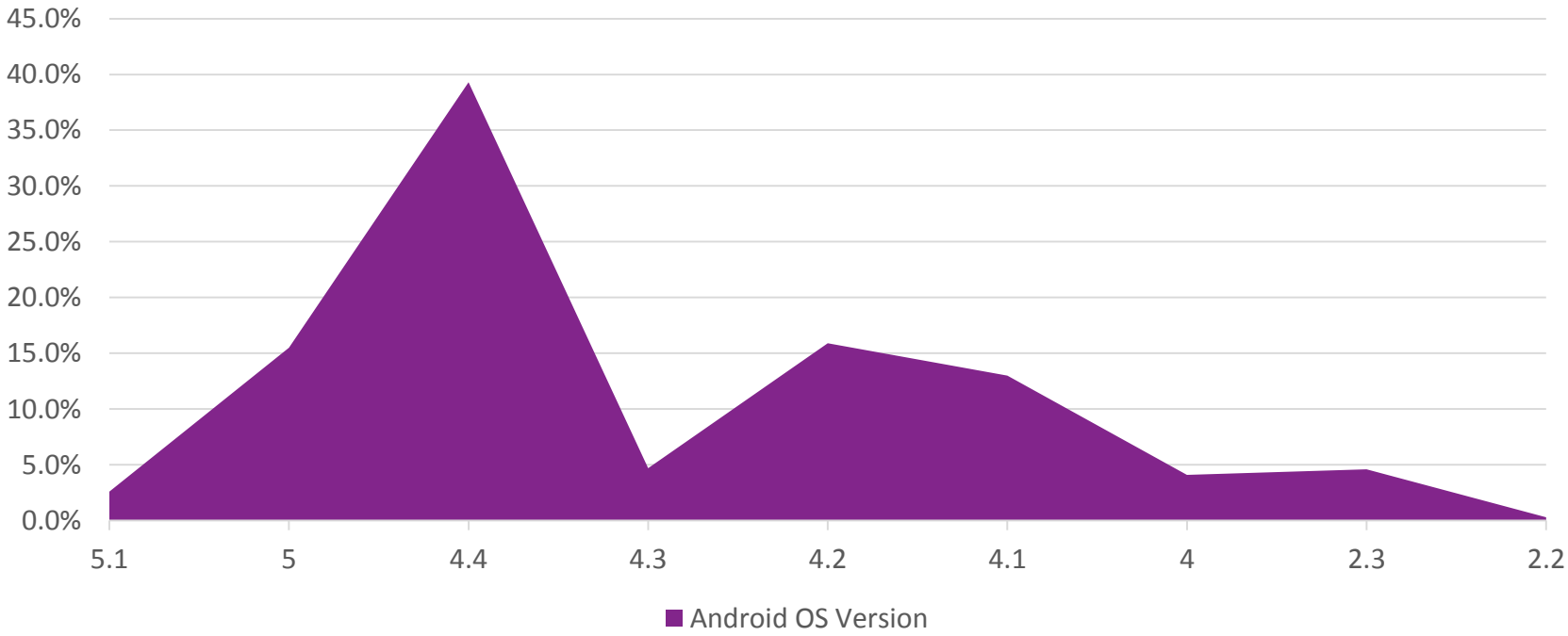
Trending Toward Irrelevance With Subscribers



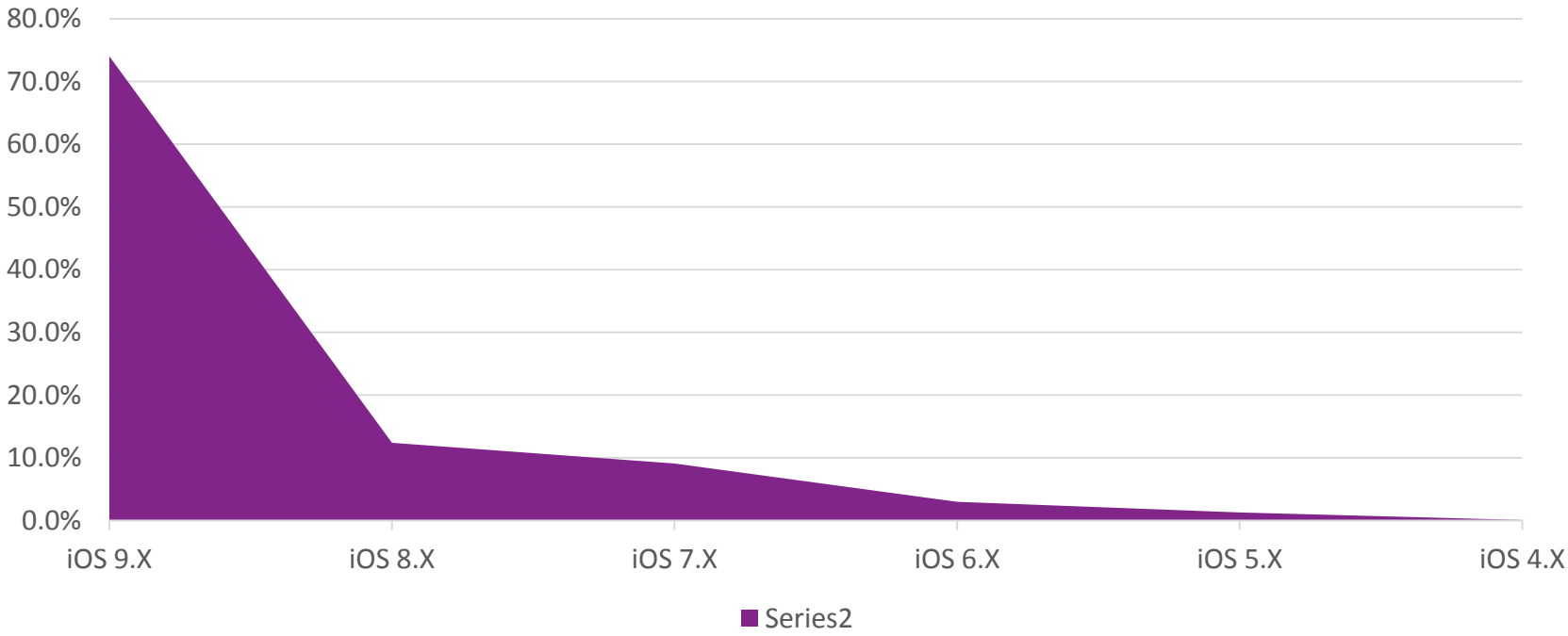
Trending Toward Irrelevance With Sales



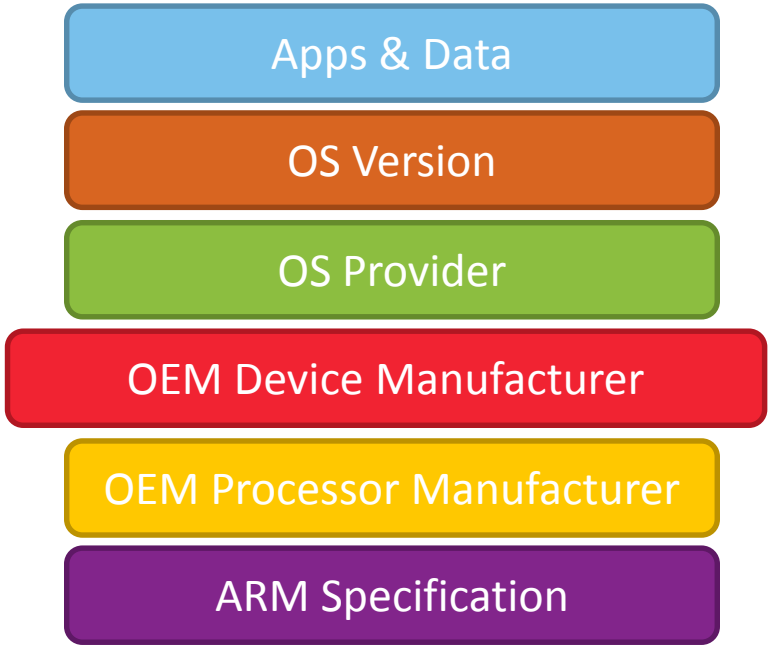
Android: Plagued by Version Fragmentation



Apple: Version Fragmentation

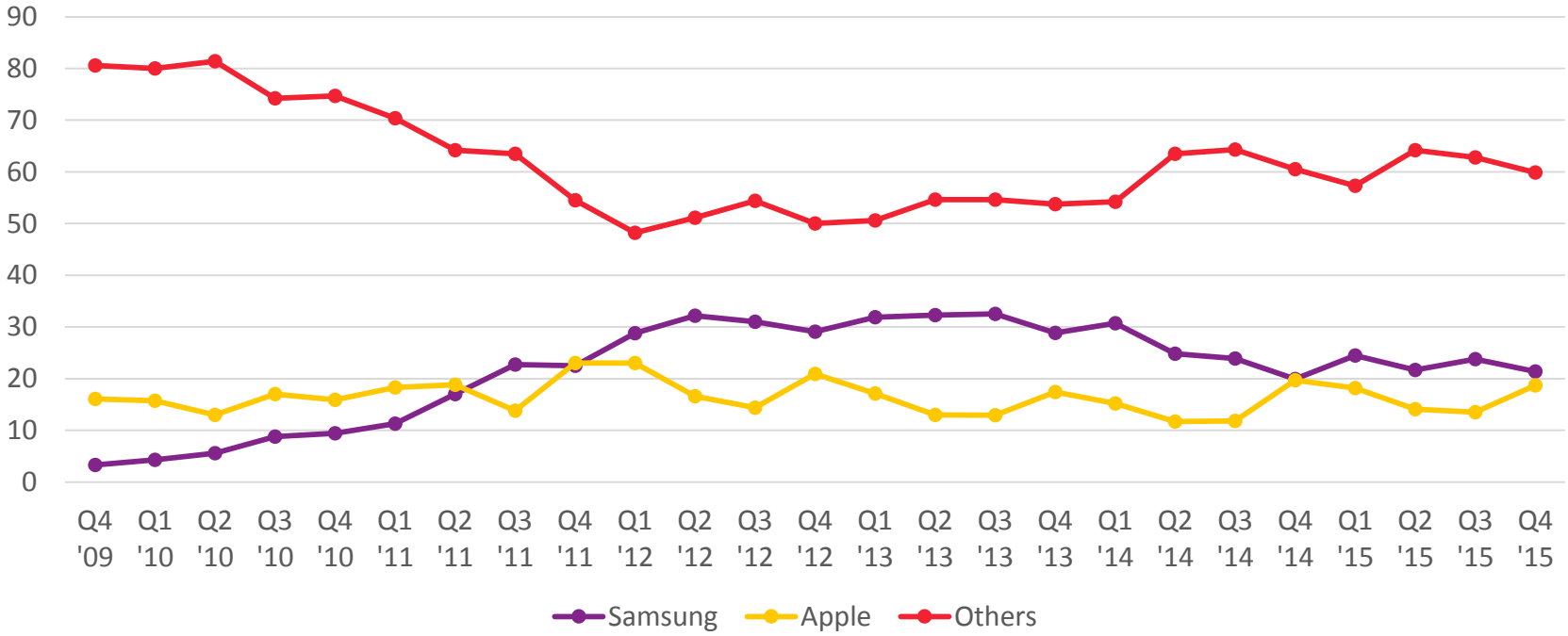


Common Talking Points: OEM

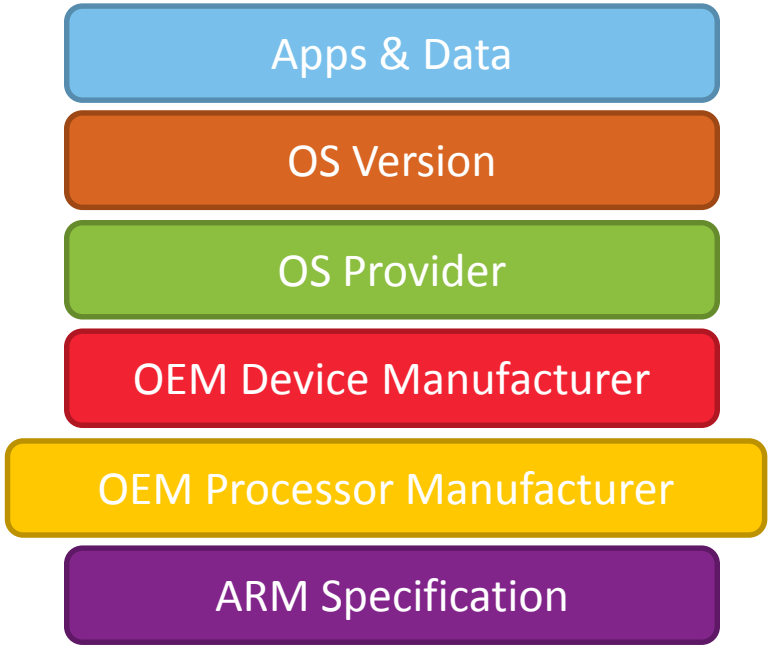


- OEM
  - Design of Hardware
  - Selection of Secure Components
  - Approach to Market
  - Solution Customization

Market Share of the Leaders

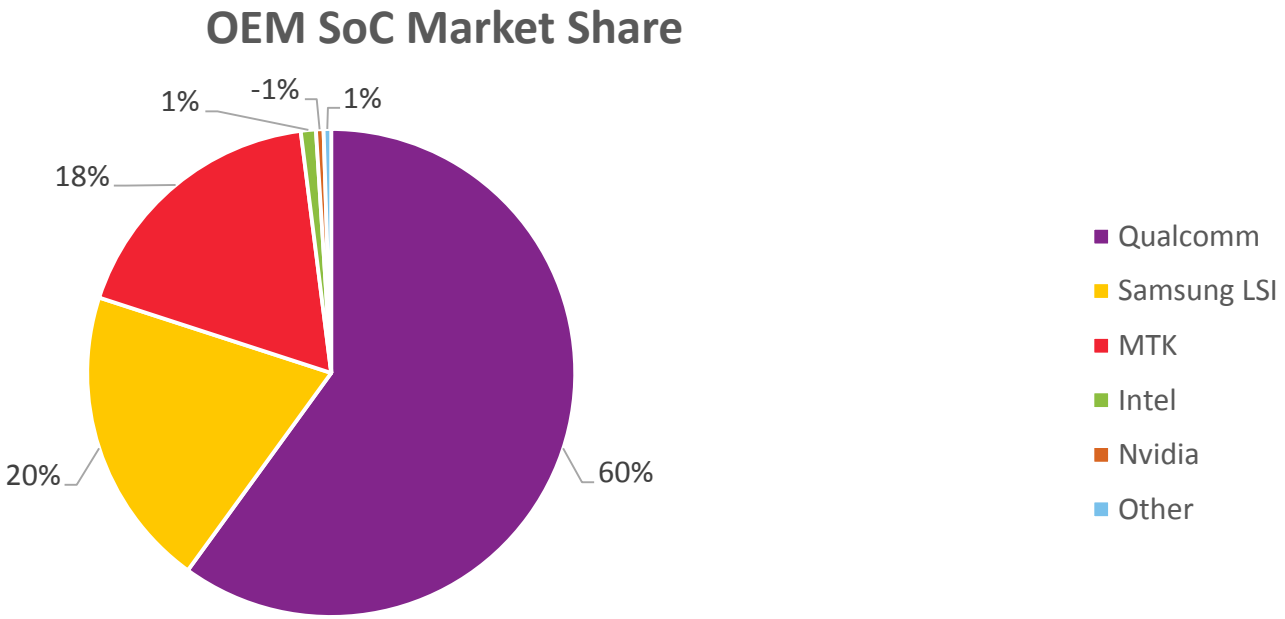


Common Talking Points: System on Chip

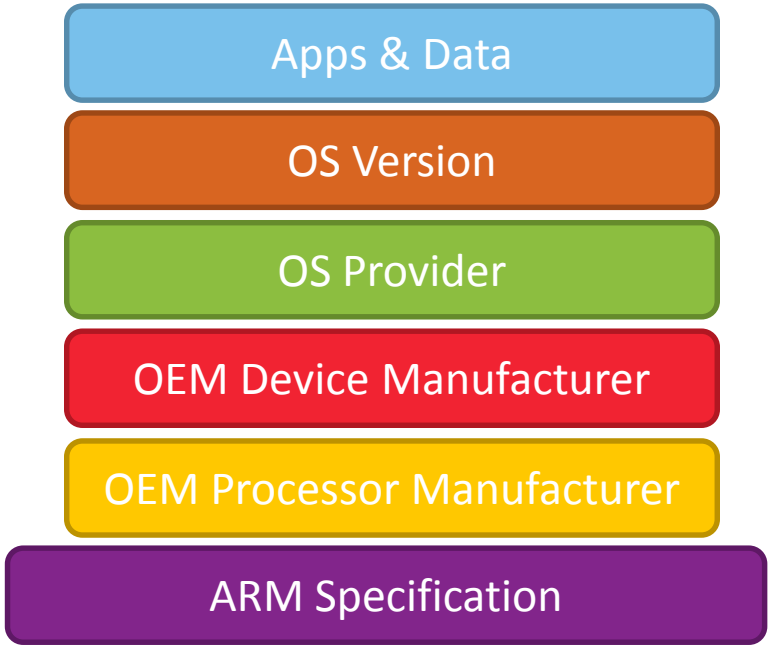


- SoC
  - Design of Component Hardware
  - Control of Trust
  - Control of Security
- SoC Version
  - Similar to OS Version
  - Incremental updates driven by platform vision

Foundations of Mobile Trust

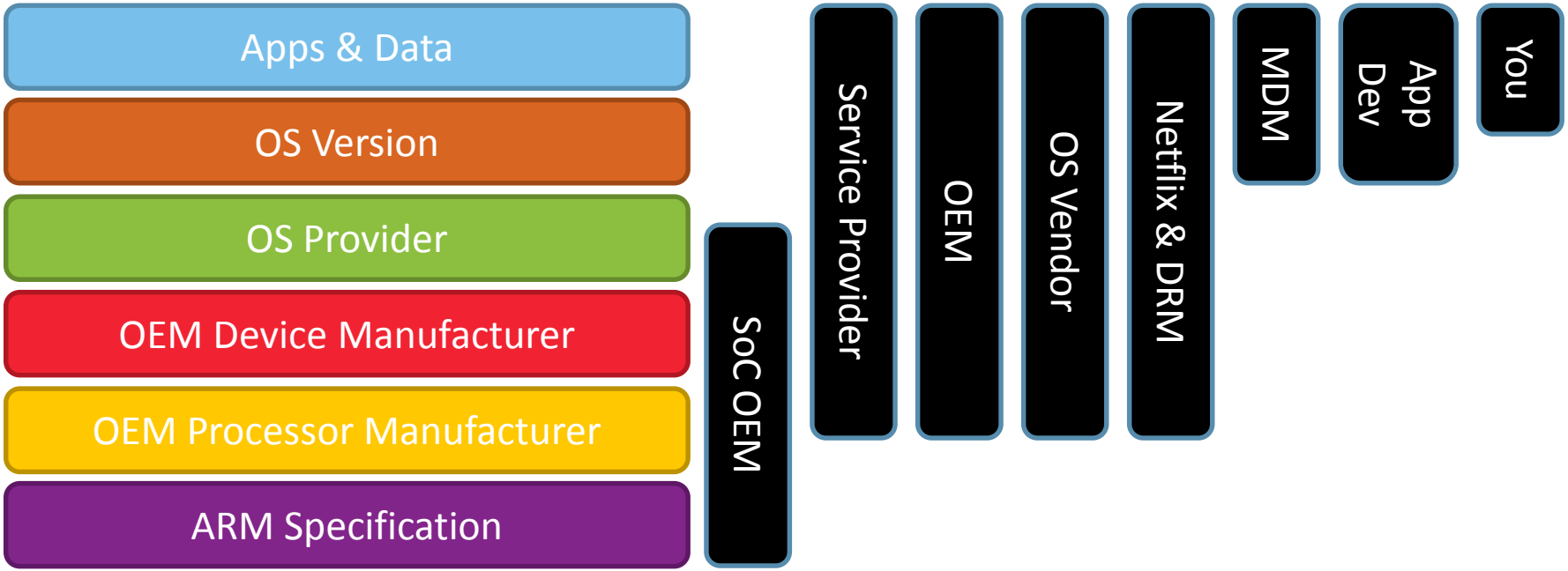


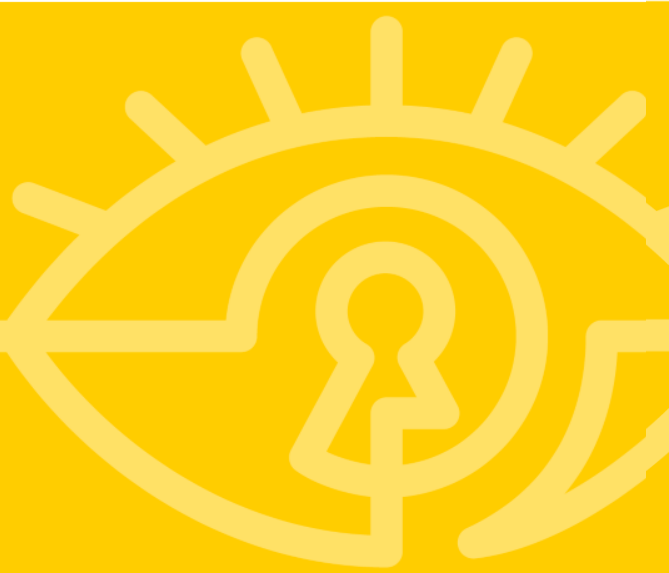
Common Talking Points: Specification



- ARM Specification
  - Core Design of Security
  - Applied Academic Design
  - As Much Theory as Reality

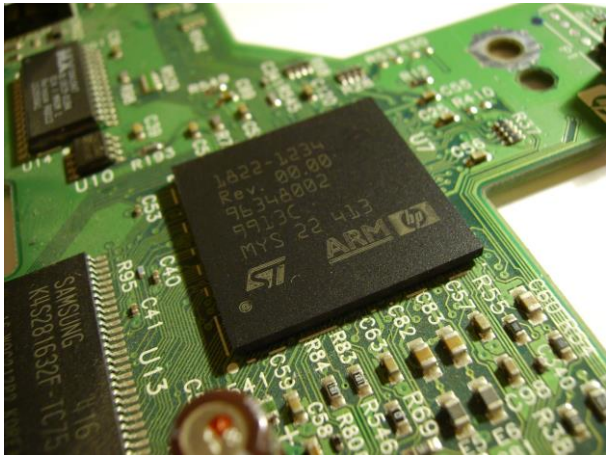
Who Writes The Software?

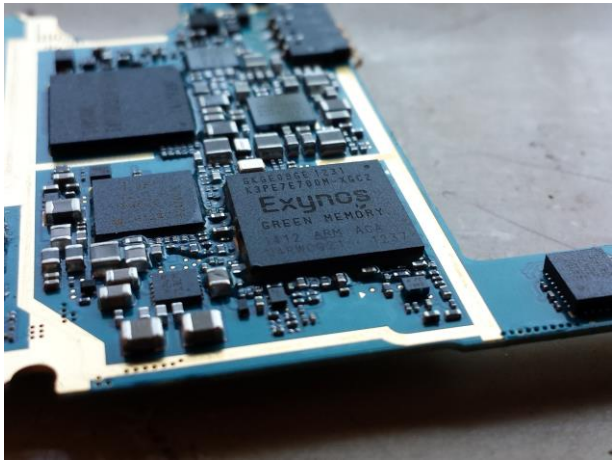




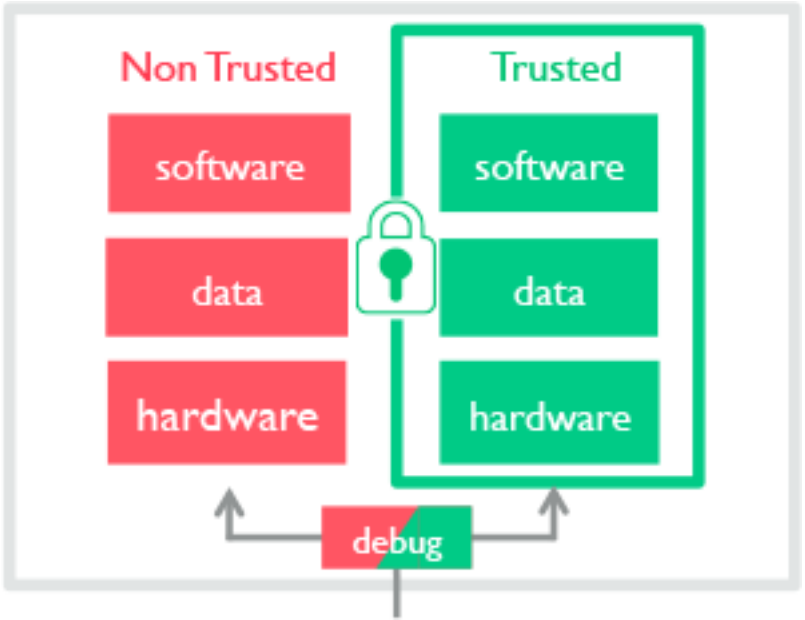
Foundational Problems

Mobile Security Starts Here





Introduction to Embedded Trust



TrustZone Bugs in the Wild

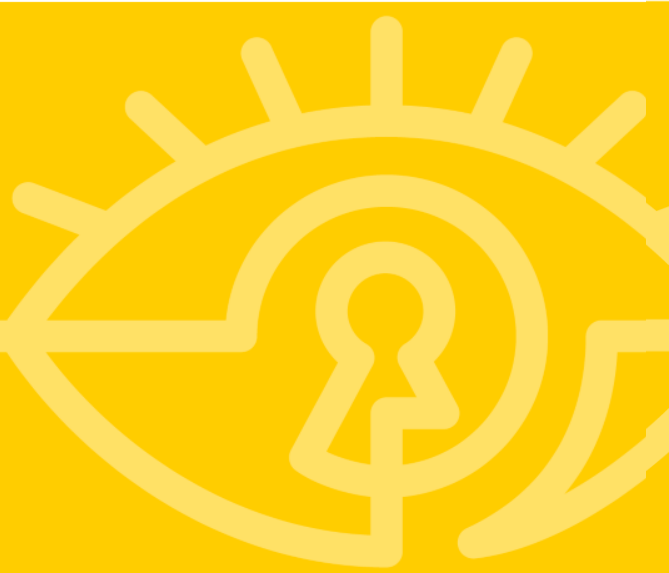
- In the past 18 months the following vulnerabilities in Mobile Processors have made public
  - Holmes & Keltner – Recon 2015
  - Rosenberg – BlackHat 2015
  - Xxx
  - Yyy
  - Zzz

1-2 Slides per Security Vulnerability

- What is was
- How it worked
- Who was at fault
- What was the impact?
- **Currently finishing these slides**
- **While it does not seem like it right now, this will be at least ½ the talk time on stage once setup is complete**
- **There will be few slides though.. More of a conversation about bugs and impacts**

Cross Device Impacts

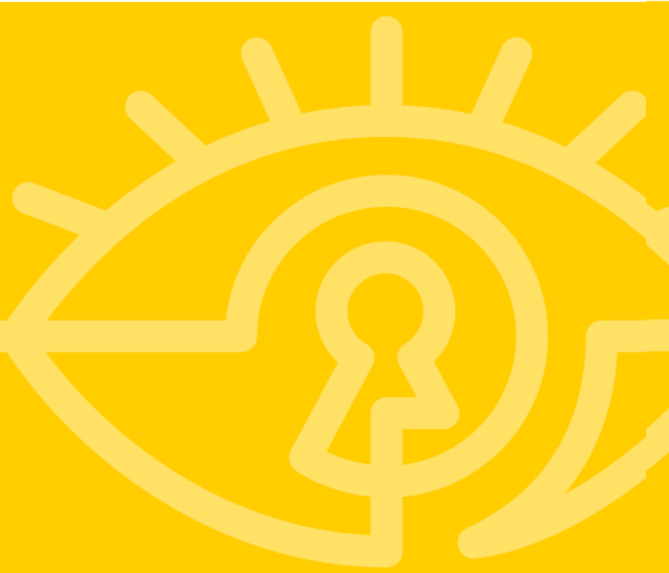
- One bug to cross OEMs?
  - No Problem
- One bug to cross Operating Systems?
  - Likely



Transition from fear to action

“Apply” Slide

- This Week
  - Think about what hardware you are using
  - Think about what you are actually protecting
  - Ask your MDM Vendor if the use OS Security
- This Quarter
  - Know your hardware based exposure
  - Track known hardware issues against that exposure
- This Year
  - Focus on device patching and disallowing certain chipsets in your environment



Questions?

References

- All Statistics pulled from
  - Statista: http://www.statista.com/
  - Open Signal: https://opensignal.com/