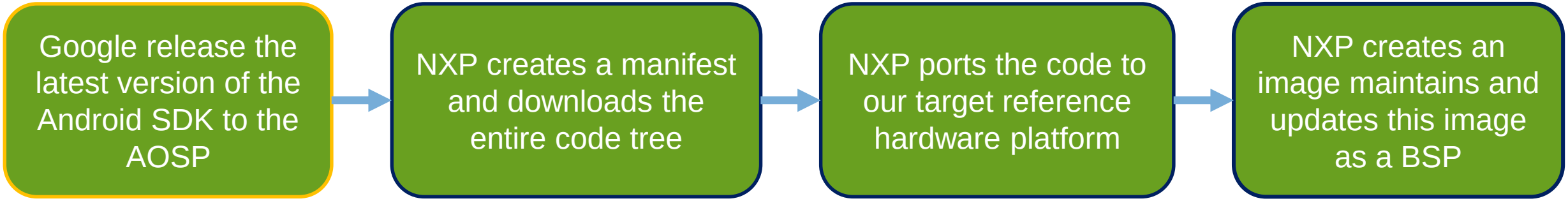
Android Things & NXP

NXP FAE

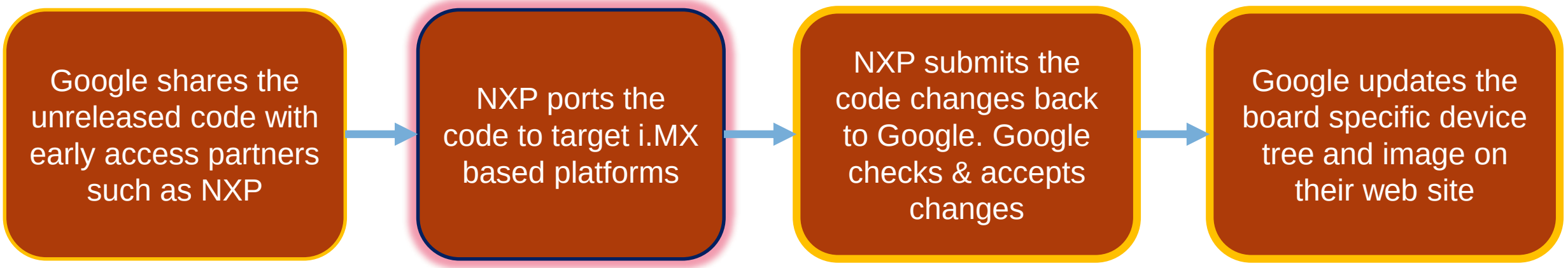
2018, JAN 22

Google & NXP

Android



Android Things



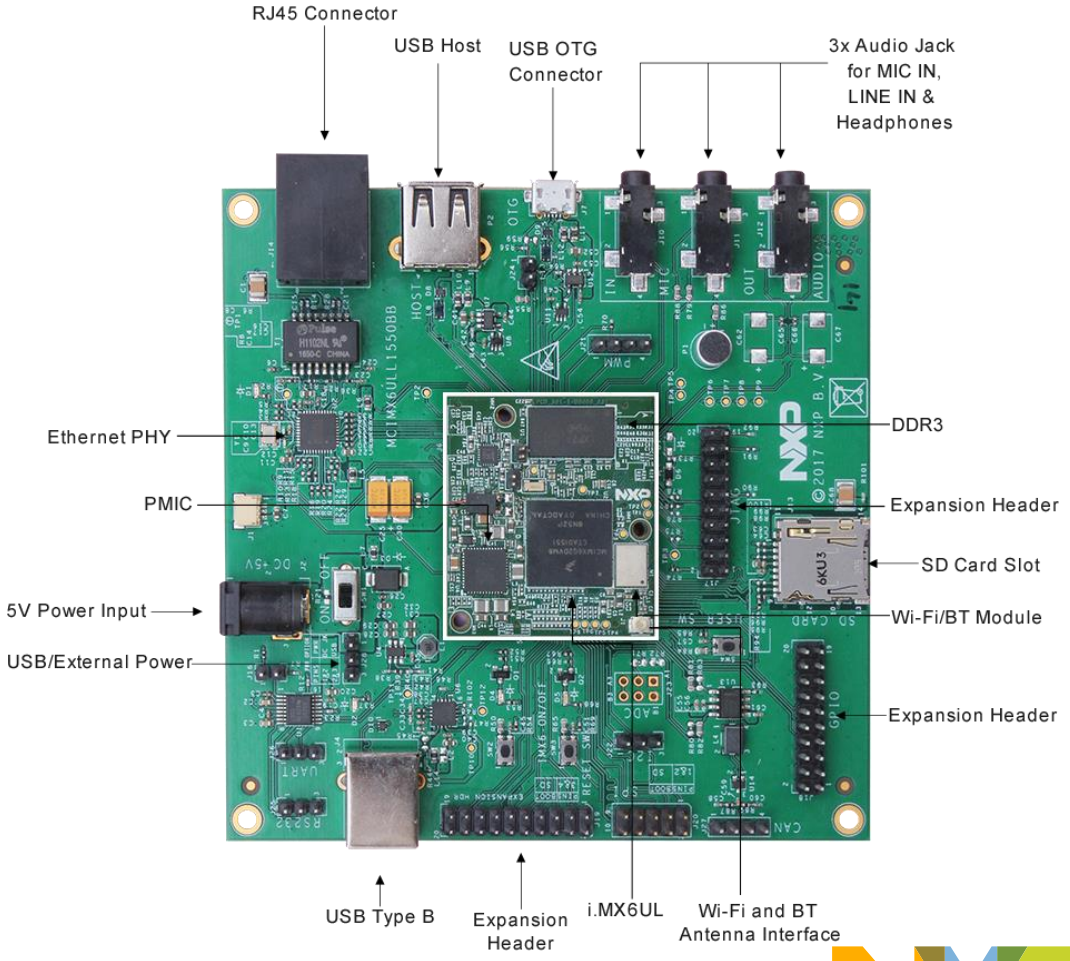
Agenda

- **Development boards with NXP SOCs**
- Best SOCs for Android Things
- Demo on setup development board
- Q & A

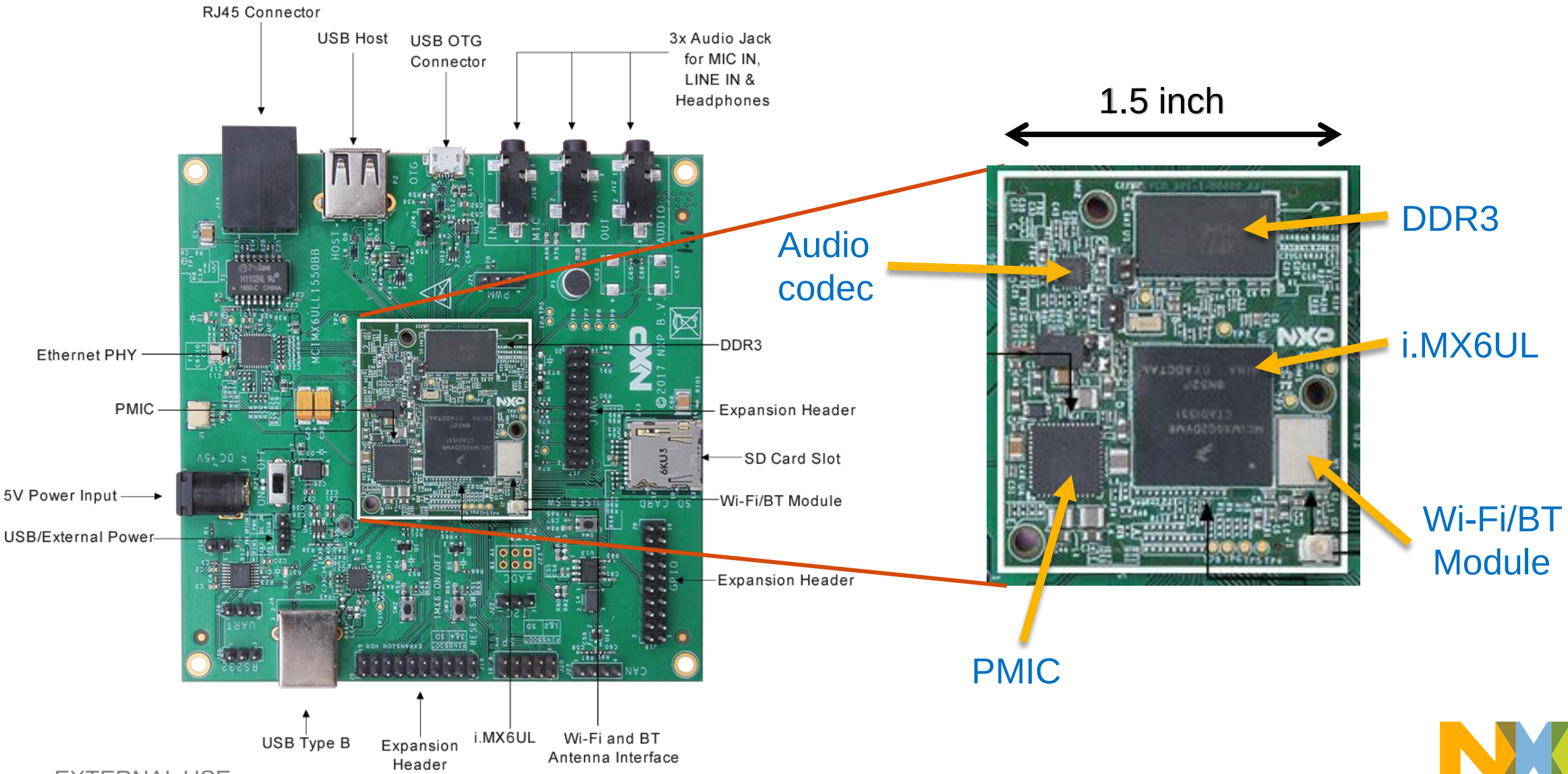
android things

NXP and Partner board offering

- Based on two processors
  - i.MX7D
  - i.MX6UL
- Two partner:
  - Technexion
  - VVDN Tech



Prototype to Production…System On Module



Pico i.MX6UL and 7Dual

SOM Key Features:

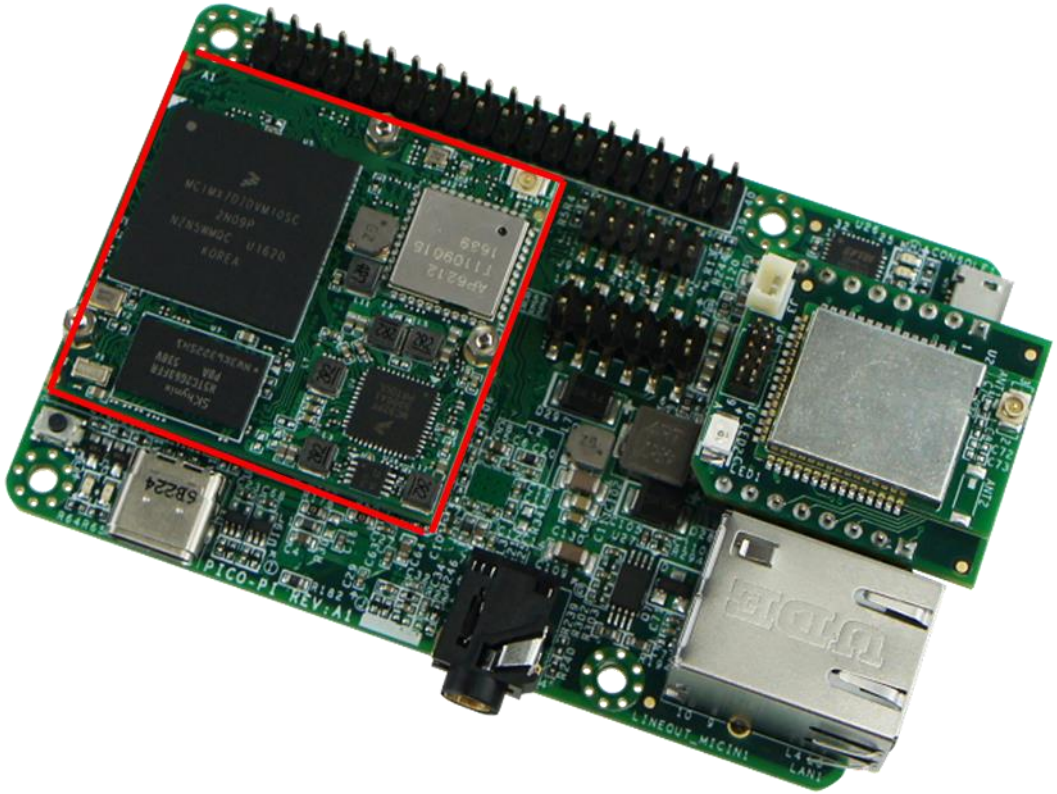
- i.MX6UL/7D
- Memory: 512MB DDR3L
- Onboard Storage: 4GB
- Wi-Fi: 802.11n (6UL) 802.11 ac (7D) BT 4.1
- PMIC NXP PF3000

Base Board:

- Focused on Raspberry Pi form factor & interfaces
- Low cost platforms ($65 & 75)

Availability:

- TechNexion.com
- Digikey
- Mouser



Chromecast built-in

NXP Certified Partner Boards –Argon i.MX6UL

SOM Key Features:

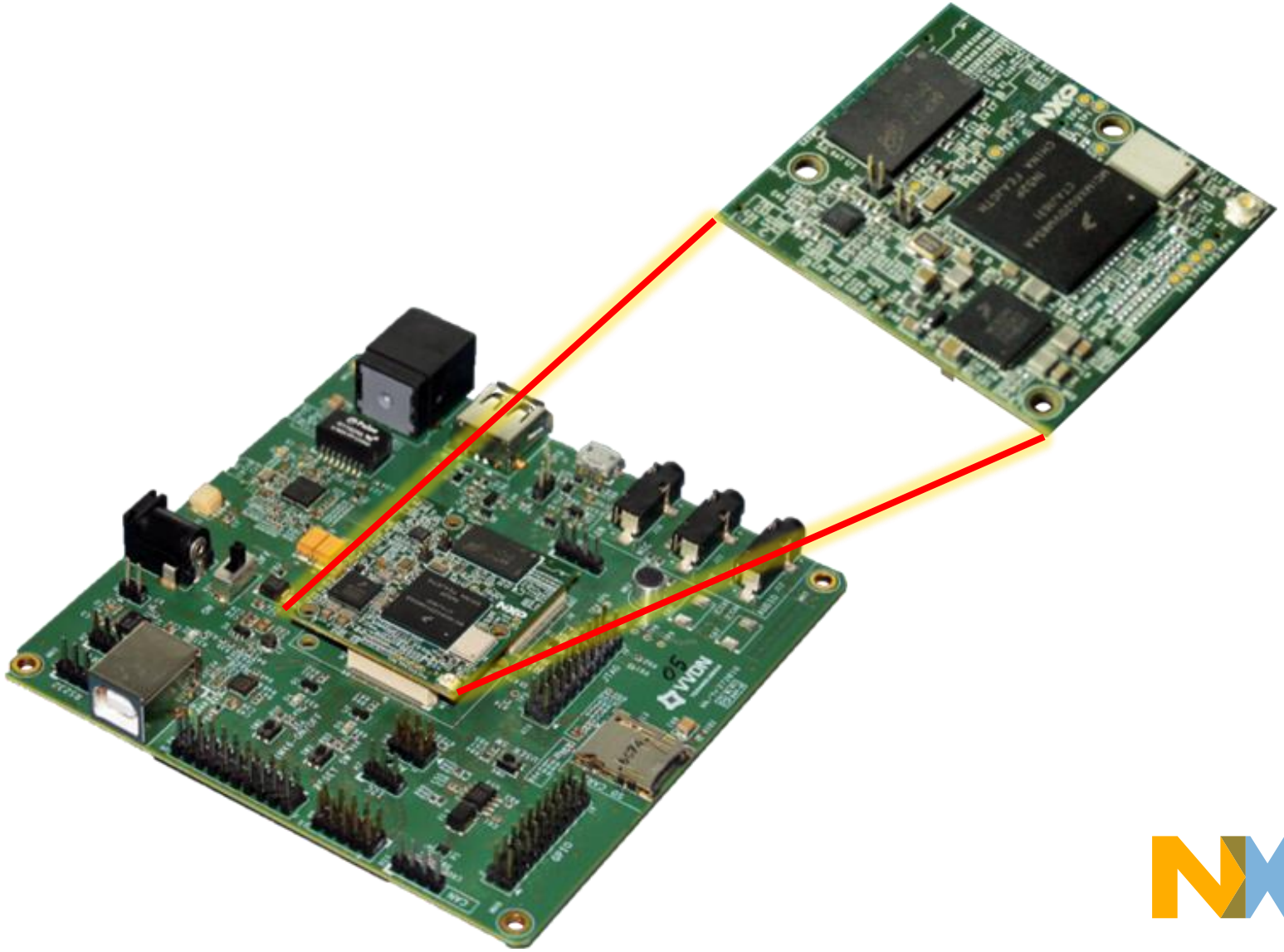
- i.MX6UL
- Memory: 512MB DDR3L
- Onboard Storage: 4GB
- Wi-Fi: 802.11n
- PMIC NXP PF3000

Base Board:

- 3 Expansion connectors
- 3 x Audio Jack
- USB Host, OTG, type B
- SD Card slot
- $65

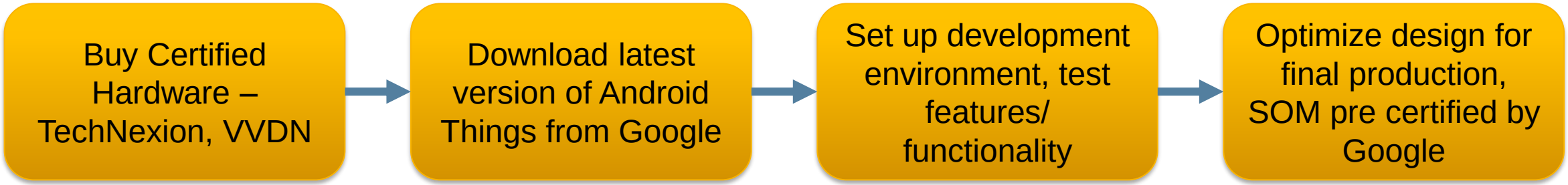
Availability:

- Argonboard.com

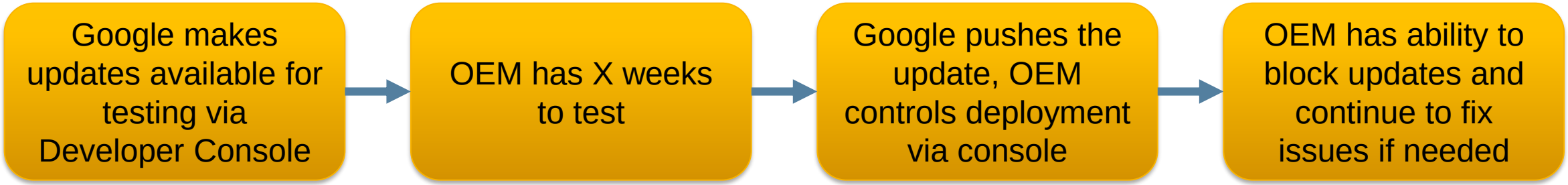


Engagement Model

Development



Management



NXP offering – Key Customer Advantages

Certified Hardware

Prototype devices on certified hardware, quickly test features/functionality.

NXP based SOM's include memory, PMIC, WiFi/BT module.

Time to market

Decrease development and time to production.

- Certified, production ready SOM's.
- Driver, HAL, firmware integrated & production ready.

Build to Scale

Work with NXP/Partners directly to scale volume & optimize board design.

Devices run on a proven and production ready platform

Google Services

Take advantage of the Android ecosystem:

- Google managed updates
- Android GMS services
- Google Cloud platform
- Assistant & Chromecast

Android Things Useful Links

- NXP web pages: http://www.nxp.com/AndroidThings
- Android Things Developer site https://developer.android.com/things/index.html
- G+ Android Things community **g.co/iotdev**

- Argon board landing page http://www.argonboards.com/Argon-imx6UL-SOM.php
- TechNexion landing page: http://www.technexion.com/solutions/iot-development-platform/android-things/
- Murata landing page: http://wireless.murata.com/eng/products/wireless-connectivity-platforms/iot-system-on-module.html

Blog posts:

- https://blog.nxp.com/iot/android-things-adds-i-mx-7dual-and-google-voice-assistant-support
- https://android-developers.googleblog.com/2017/05/android-things-developer-preview-4.html

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i.MX Processor Roadmap

Two New i.MX Platforms Based on 28nm FD SOI Technology

i.MX 6 QuadPlus

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i.MX 6 Quad

↓

i.MX 6 DualPlus

↓

i.MX 6 Dual

↓

i.MX 6 DualLite

↓

i.MX 6 Solo

↓

i.MX 6 SoloX

↓

i.MX 6 SoloLite

↓

i.MX 6 UltraLite

ARM® v7-A

i.MX 8 series

Advanced Graphics & Performance

ARM® v8-A

i.MX 7 series

Power Efficiency

ARM® v7-A

i.MX 7Solo

- Single ARM® Cortex®-A7 up to 800 MHz
- Cortex-M4 up to 200 MHz
- 512KB L2 cache
- 16/32-bit DDR3/DDR3L and LPDDR2/3 at 533 MHz
- Single Gigabit Ethernet (AVB)
- **Full security with tamper resist**

i.MX 7Dual

- Dual ARM® Cortex®-A7 up to 1.0 GHz
- Cortex-M4 up to 200 MHz
- 512 KB L2 cache
- 16/32-bit DDR3/DDR3L and LPDDR2/3 at 533 MHz
- Dual Gigabit Ethernet (AVB)
- **Full security with tamper resist**
- EPD controller
- PCIe (x1 lane)

Red indicates change from column to the left

Pin-to-pin and power compatible

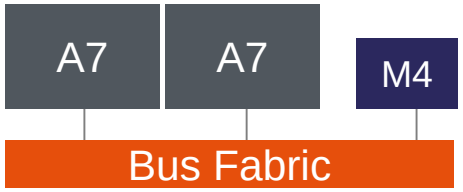
Software compatible

Consumer

Extended Consumer

Advanced Heterogeneous Architecture

- Up to Dual Cortex-A7 @ 1GHz
- Cortex-M4 @ 200MHz
  - Offload Tasks
  - Optimize Power
  - Increase Security



Unmatched Power Efficiency

- 3x improvement in Power Efficiency vs i.MX 6
- 100 uW/MHz for Cortex-A7
- 70 uW/MHz for Cortex-M4
- One third the power consumed in the Low Power suspend mode (250uW) vs i.MX 6

Enabling Flexible High Speed Connectivity

- PCI-e v2.1
- Dual Gbit Ethernet with AVB
- DDR QuadSPI support
- eMMC 5.0

Complete Security Infrastructure

- Secure Boot
- Crypto H/W Acceleration
- Internal and External Tamper Detection
- Secure RAM
- DPA attack Resistance
- Secure JTAG

Market Challenges Addressed by i.MX 7 series

- Achieving longer battery life
- Addressing system security needed in IoT systems
- Integrating memory standards which produce best performance and cost
- Maintaining latest high speed connectivity standards
- Achieving small form factors for space constrained applications
- Supporting the latest EPD technology

i.MX 7Dual/Solo Family Target Applications

MOBILE DEVICES

LPDDR2/3
Small Package




- Healthcare / Patient Monitoring
- HMI Control / Security
- Point of Sale
- Printing
- Home Control
- Wearables
- eReaders
- General Embedded Control
- Embedded Board Solutions
- IoT

CONNECTED DEVICES

Low Cost DDR3
Larger Pitch Package



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SECURE CONNECTIONS
FOR A SMARTER WORLD