

X15 in AOSP

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Overview

- Problem? (Product->Community focus)
- Why X15 ?
- AOSP Dev board requirements? Why X15
- Upstream Vs Downstream flow
- Upstream status
- Future work

Problem?

- From

- Mirror / Fork <https://android.googlesource.com/> <tag_name>
- Forward port / Rebase fixes on <tag_name>
- Internal reviews
- Test on limited platforms and usecases manually
- Release SDK
- <Restart>

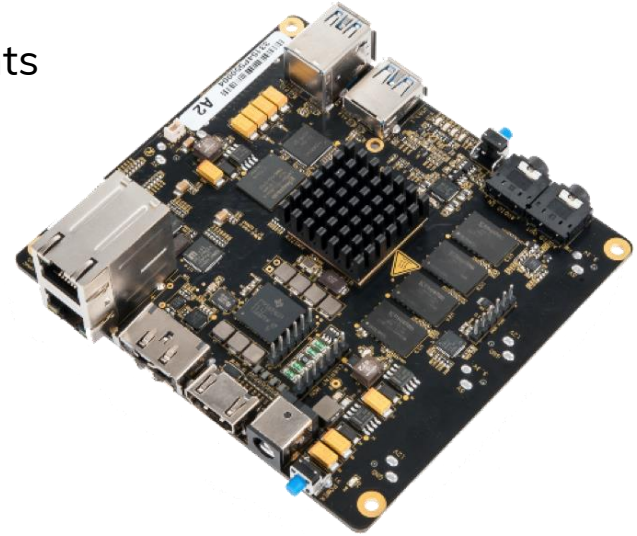
- 
- **Larger Pastry Migration Cycle**
 - **Larger Effort in New Platform**
 - **Larger Test and Release Cycle**

- To

- Add community variant platform in mainline
 - `repo init -u https://android.googlesource.com/platform/manifest -b master;repo sync`
 - `lunch beagle-x15-userdebug;make -jX`
 - Support Key features for android development
- Fork <https://android.googlesource.com/> <tag_name>
- Rebase non upstreamed fixes, Also rework as per review for master
- Limit internal review and have platforms available in public sooner
- Automate Test on more TI and AOSP Dev boards (LCR/LKFT)
- <Restart> on new pastry tag,

Why X15 ?

- Open Platform, Well supported by community
- ARM 32bit platform (A15)
- Used by Embedded, Industrial and Automotive Segments



<https://beagleboard.org/x15>

<https://wiki.linaro.org/Boards/BeagleBoard-X15>

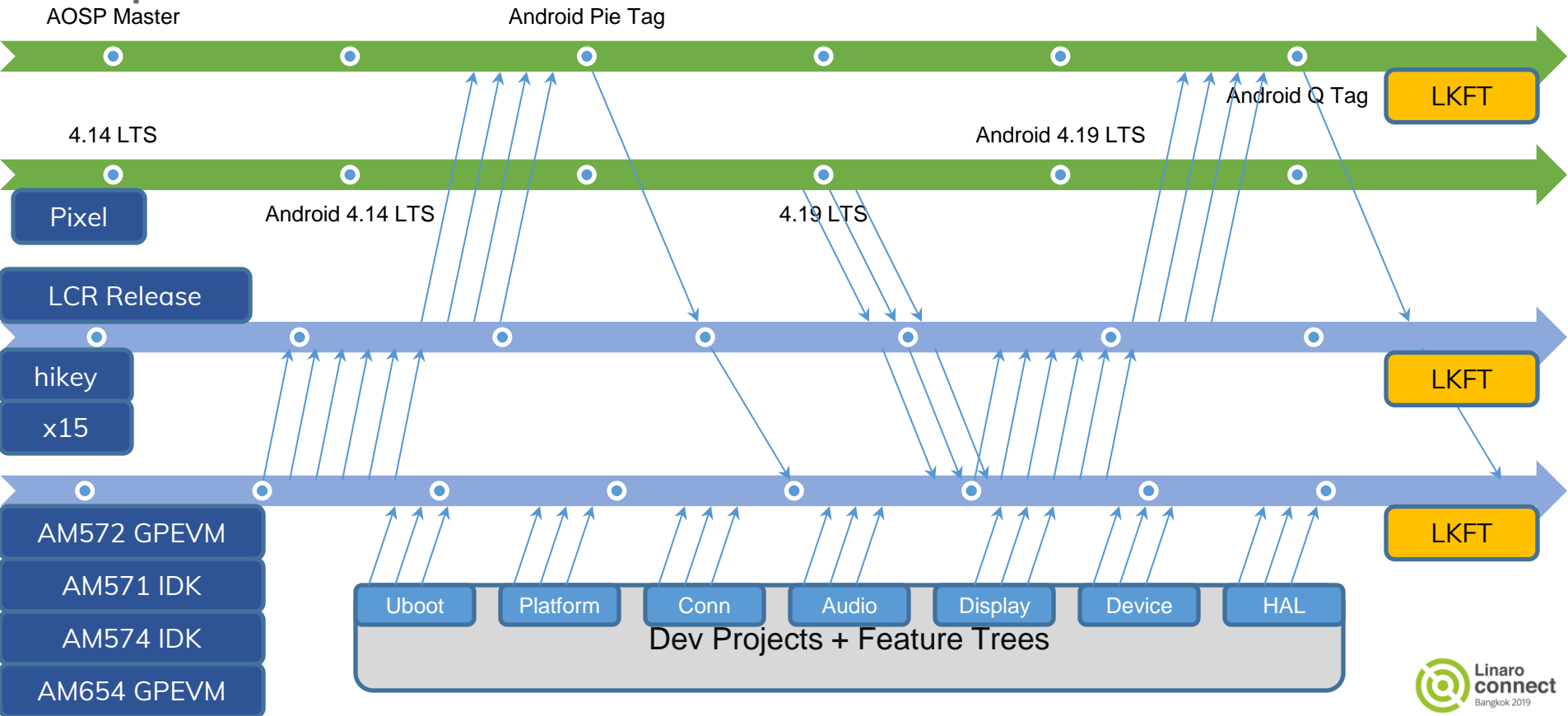
AOSP Dev Board Requirement: Why X15?

Hardware Requirement	X15 Status
Available to Google and community in Open Market	Good
Available Documentation	Good: TRM, Schematics
Decent RAM size	Good: 2GB
Internal Boot media (eMMC)	Good: 4GB
USB Ports	Good: 5
Network Connectivity	Good: Ethernet, Wifi-Add on available

AOSP Dev Board Requirement: Why X15?

Software Requirement	X15 Status
Continuous Support for at least 2 years	Good: Thru Linaro Triage
Open Bootloader Support	Good: Mainlined and tested on all LTS
LTS Kernel Support	Good: Mainlined and tested on all LTS
USB	Good: ADB, Mass Storage
Derivative of Android-common Kernel	Good: Auto merge of Kernel-common
No Never Ending Crash loop in Android Fwk	Good: 60fps
Multimedia Support	Good: SW Video and Audio Decode
GPU Support	Good: GPL KM, UM FW Public Available
Treble Support	Good: Upstream in progress

Upstream Vs Downstream



Bootloader: Upstream Progress

Boot Stage	Feature	X15 Status	Planned Next
Uboot	AOSP Tag update	Done	Maint Tag update
	Platform Enablement	Done – In Mainline	New Platform and SOC variants
	Boot from eMMC	Done – In Mainline	New Platform and SOC variants
	Boot from SPI	In Progress	QSPI, OSPI on New Platforms
	Fastboot	Done – In Mainline	Reboot Reason
	Device Partitioning	Done – In Mainline	Dynamic Partitioning
	AVB 2.0	In Progress	-
	System A/B	In Progress	-
	Clang Build	Yet to Start	-

<https://source.android.com/devices/bootloader>

Kernel: Upstream Progress

Domain	Feature	X15 Status	Planned Next
Platform	Basic Platform Support	In Mainline	New Platform and SOC Variants
	DT/ Overlays Using FIT	Done	New Platform and SOC Variants
	Android-Common Integration	Done	With 4.19 – Compliance Fixes
	Android-Config Integration	Done	With 4.19 – Compliance Fixes
	Clang Build	In Progress	With 4.19+
Connectivity	eMMC Boot	In Mainline	-
	USB Gadget mode (ADB)	In Mainline	-
Multimedia	ALSA	In Mainline	-
	omapdrm display	In Mainline	-
	ION Buffer allocation	In Progress	Destaging/ dma-buf-heaps
	PVR KM	Out of tree Integration	-

AOSP: Upstream Progress

Domain/Project	Feature	X15 Status	Planned Next
device/ti/beagle_x15	Basic Platform Support (lunch)	In Mainline	Android Auto Lunch Target
	Treble Support	In Mainline	Android P/Master fixes
	SELinux Policy	In Mainline	Android P/Master fixes
	ADB	In Mainline	-
	PVR Firmware	In Mainline	Android P/Master fixes
device/ti/beagle_x15-kernel	Ref Image with AOSP Build System	In Mainline	-
hardware/ti/am57x	HWC1.0+	In Mainline	HWC2.1+ with drm_hwc
	Boot Control HAL1.0	In Progress	Validate with A/B-AVB2.0
	Audio HAL	Yet to Start	Android Q Migration
external/libdrm	OMAP device	In Mainline	-
system/core	Dynamic Kernel module loading	In Mainline	-
CTS/VTs	Compliance Fixes	In Progress	4.19+P Combination fixes
manifest	-	In Mainline	-

AOSP next steps: Summary

- Enable device @ci.android.com
- Documentation @source.android.com
- Update 4.14->4.19 baseline
- Compatibility : Current Pastry + LTS
- Upstream Features
 - Bootloader*
 - HAL*
- New in Android Q
- New in Android Auto

Thank you



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