Ubuntu in your hands: The Going Ons at UBports

Agenda

- Overview
- Porting
- App development
- Platform development

Overview

- State of the platform
  - 15.04 → 16.04 → 20.04 → 22.04
  - Hardware partners!
  - Volla, Pine64, SHIFT
  - Upgraded middleware (Qt, sensors, NFC)

Overview

- Goals
  - An OS that works
  - Focus on the user experience
  - Works on phones, tablets & the desktop
  - Bullet-proof OS & app upgrades
  - Security → privacy

"Ubuntu Touch is not a traditional PC Linux distribution, and phones aren't traditional PCs."

Overview

- "What's the OS? What's an app?"
- Read-only system, separation of user data
- Apps might ship their own dependencies
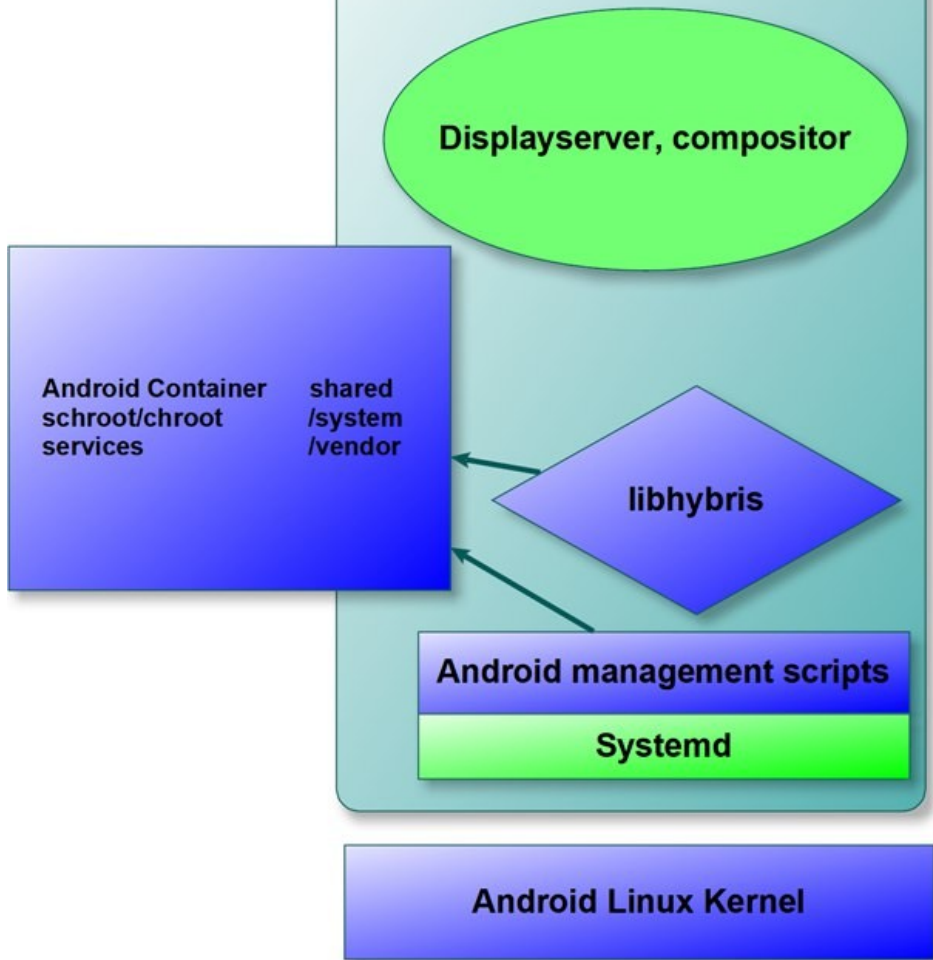- App lifecycle & power reduction
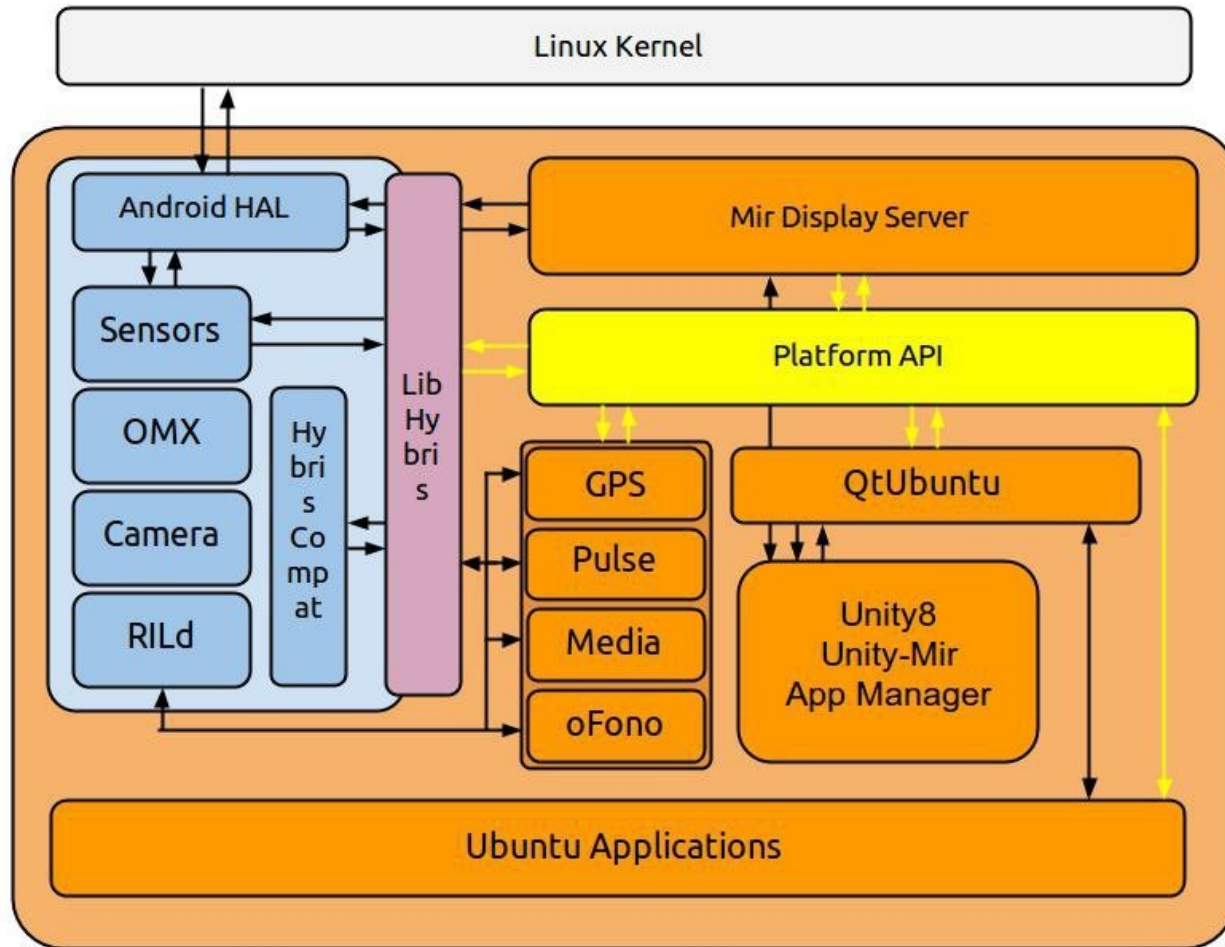- Libertine containers
- Waydroid

Porting

Porting

- Halium
  - Android vendor kernel + services in a LXC container
  - Supported versions: 7.1 to 11
- Mainline kernel
  - PDK image is one example
  - In the case of PinePhone: additional patches
  - Still requires changes to the defaults

```
Linux Kernel
```

Android HAL
Sensors
OMX
Camera
RILd
Hybris Compat
Lib Hybris

Mir Display Server
Platform API
GPS
Pulse
Media
oFono
QtUbuntu
Unity8
Unity-Mir
App Manager
Ubuntu Applications

Ubuntu 14.04   Android (LXC Container)

Canonical

App development

App development

- C++, C, Python, Go, Rust, whatever Qt/QML bindings exist
- Qt 5.12, SDL2 (with patches), GTK3 (with patches)
- Halium <= 7.1: Mirclient only
- Everything else: Supports Wayland

App development

- Boundaries for apps
  - Advanced features means higher privileges required
  - Preserve battery life
  - Makes things more manageable and predictable
  - Everything outside of that: considerably insecure
  - Can be released after manual review as an unconfined app
  - Solution: submit patches to the OS!

Platform development

Platform development

- Crossbuilder
  - Builds packages using LXD container
  - Works for xenial and focal

- Platform Development Kit
  - VM to build and test using virtualization
  - focal only

Platform development

- Mir
  - A display server library compatible to Wayland (and Mirclient)
- mir-android-platform
  - Allows driving graphics using Android drivers
  - Tweakable via libdeviceinfo yaml files
- QtMir
  - Integrates Mir into the Qt Scene Graph
  - Provides QML APIs

Platform development

- Lomiri
  - The artist formally known as Unity8
  - Written in QML & C++
- media-hub
  - Background multimedia playback service
  - Allows suspending apps
  - DBus interfaces, uses GStreamer for playback
  - Partially rewritten with Qt

Platform development

- repowerd
  - Power management
  - Autosuspend
  - Wake locks
- qtubuntu-camera
  - Abstraction between Qt & Android camera stack
  - Takes pictures, records video
  - Zero-copy viewfinder
  - Single-copy viewfinder readouts

Platform development

- trust-store
  - Interactive permission system
  - Used for microphone, camera & location

- QtWebEngine
  - Drives our browser & web apps
  - Slowly regaining feature parity