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oniro

Bringing Oniro to Mobile
Challenges in Hardware Enablement

FOSS on Mobile Devices Track H.2214

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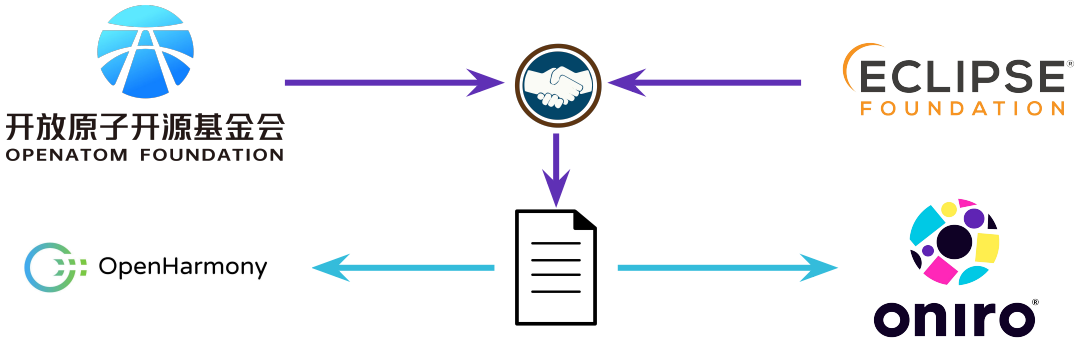
What is Oniro?

1. Oniro: An open-source OS managed by the Eclipse Foundation.
2. Built on OpenHarmony, incubated by OpenAtom Foundation in China.
3. Focused on interoperability and privacy for IoT, smart devices, and now mobile.
4. Tailored for European and global market needs.



OpenHarmony: A Growing Open-Source Ecosystem

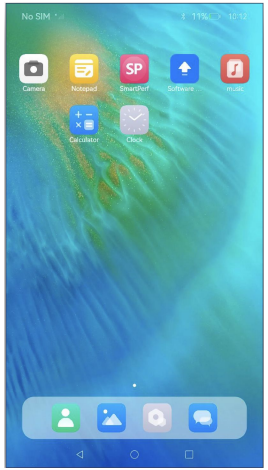
- OpenHarmony is an open-source OS driving innovation across smart devices and mobile.
- HarmonyOS NEXT is based on OpenHarmony, demonstrating its scalability for smartphones.
- It has a growing ecosystem supported by global contributors and organizations.
- Oniro builds on OpenHarmony to create a truly open, community-driven alternative for mobile.

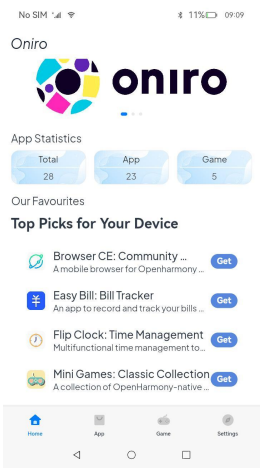
OpenHarmony

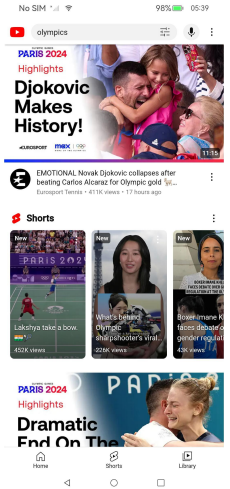
Over 320 OpenHarmony products available in the market.

Expanding the App Ecosystem

- React Native Support: Enabling cross-platform app development on Oniro in addition to ArkTS
- Oniro App Store: Creating an open-source app distribution platform.





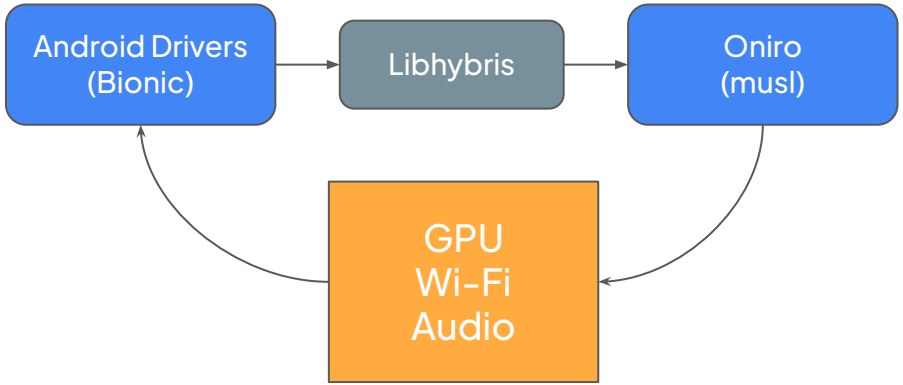


Oniro Goes Mobile

- European Phone for a European Open Source OS
- Fully committed with privacy and open source
- Having in mind the regulatory requirements
- Offering to the developers community a device for deploying their innovations
- Complements the already available developer board
- Collaboration with Volla X23 for hardware.

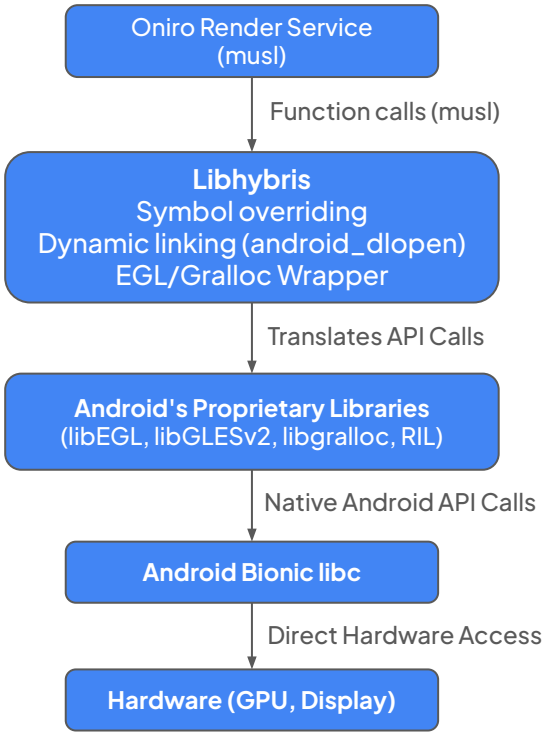
Adapting Proprietary Drivers for Oniro

- Hardware support relies on proprietary Android drivers.
- libhybris acts as a bridge, allowing musl-based Oniro to use proprietary Android libraries.
- It enables GPU acceleration (EGL/OpenGL ES) and hardware access by remapping symbols and dynamically linking Android's shared libraries.



Technical Hurdles and Solutions

- libhybris for musl: Originally for glibc, now adapted for musl using Yocto.
- Clang/LLVM toolchain: OpenHarmony uses Clang, requiring GCC-to-LLVM adjustments.
- ABI & Namespace: Adapting to OpenHarmony's LLVM-based ABI and namespace conventions.



What We've Achieved and Next Steps

Achieved:

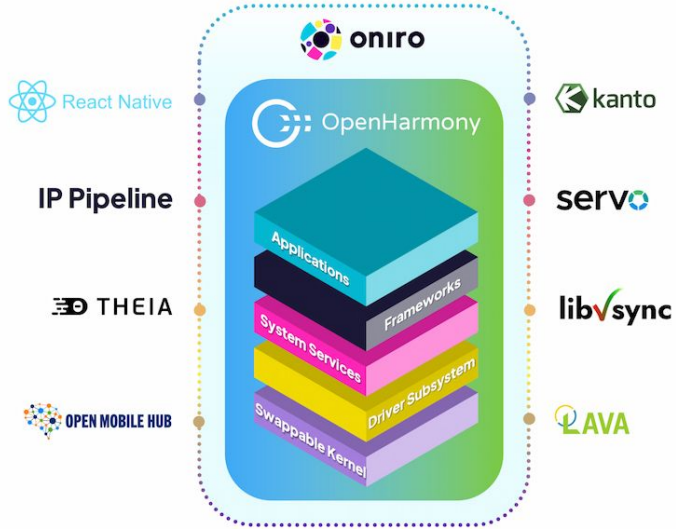
- Applied Oniro patches on Linux, including HDF support.
- Oniro runs in LXC with DRM display output.
- Setting up system and library dependencies.

Next Steps:

- Enable audio, sensors, telephony.
- Refine libhybris for musl and LLVM toolchain compatibility.
- Strengthen hardware collaboration.

Building an Open-Source Mobile Future

- FOSS mobile platforms offer more choice and flexibility.
- Oniro aims to provide a fully open, privacy-respecting alternative.
- Collaboration with existing open-source communities strengthens the ecosystem.
- Leveraging OpenHarmony's progress while adapting it to global needs.



Join Us in Shaping the Future

Contribute to Oniro development. Let's create an open, secure mobile ecosystem together.

Think Global and Code Local

oniroproject.org

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