



# What's new in the land of Oniro 2.0



Oniro 2.0 - What's new in the land of Oniro

# Oniro, production-grade open source



- Eclipse Foundation project and working group with 9 members
- Launched at EclipseCon 2021
- A distributed OS for interoperable devices, big and small
- Opinionated defaults: reference images as opposed to collection of libraries
- Continuous Integration, Continuous Deployment, Continuous Validation, Continuous Compliance
- Compliance envelope: production artifacts such as V&V reports, SWBOM
- Bugs and CVEs policies with Service Level Agreements

# Market driven development



- Market analysis
- Requirements grouping
- Work prioritization (20/80 rule)
- Integration, opinionated defaults and blueprints, testing, documenting, compliance artifacts (60/10/10/10/10)
- Infrastructure



## Down the Oniro 2.0 hole

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# The sausages ... err OS images making factory



## Bitbake

- Heart of the Yocto Project
  - Broad collection of Linux libraries and software
- Linaro's Ledge project
  - Hardware scalability
- Layered architecture

# Oniro's 2.0 layers

```
d00560544@davidlinux-oryx:~/Projects/eclipse/oniro$ tree -L 1
.
├── bitbake
├── docs
├── ip-policy
├── meta-arm
├── meta-clang
├── meta-freertos
├── meta-freescale
├── meta-intel
├── meta-java
├── meta-ledge-secure
├── meta-openembedded
├── meta-openharmony
├── meta-raspberrypi
├── meta-rauc
├── meta-riscv
├── meta-seco-imx
├── meta-seco-intel
├── meta-seco-rockchip
├── meta-secure-core
├── meta-security
├── meta-ts
├── meta-virtualization
├── meta-zephyr
├── oe-core
└── oniro
    └── README.md -> oniro/README.md
```

- build system
- oniro recipes
- open embedded core recipes (including linux kernel)
- hardware support
- documentation
- ip policy
- zephyr and freertos
- system OTA
- openharmony

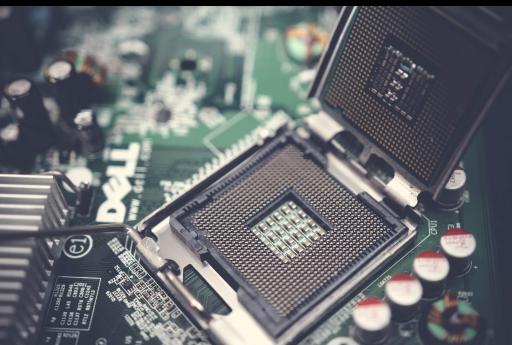


## Devices, big and small (a.k.a. "flavours")

- Linux 5.10 for higher end devices (Cortex A, Intel, RISC-V)
- Zephyr 3.1 (default, LF project, used by Linaro's Lite) for lower end devices (Cortex M)
- FreeRTOS (experimental)
- Lite OS (comes with meta-openharmony, used in Huawei's devices)

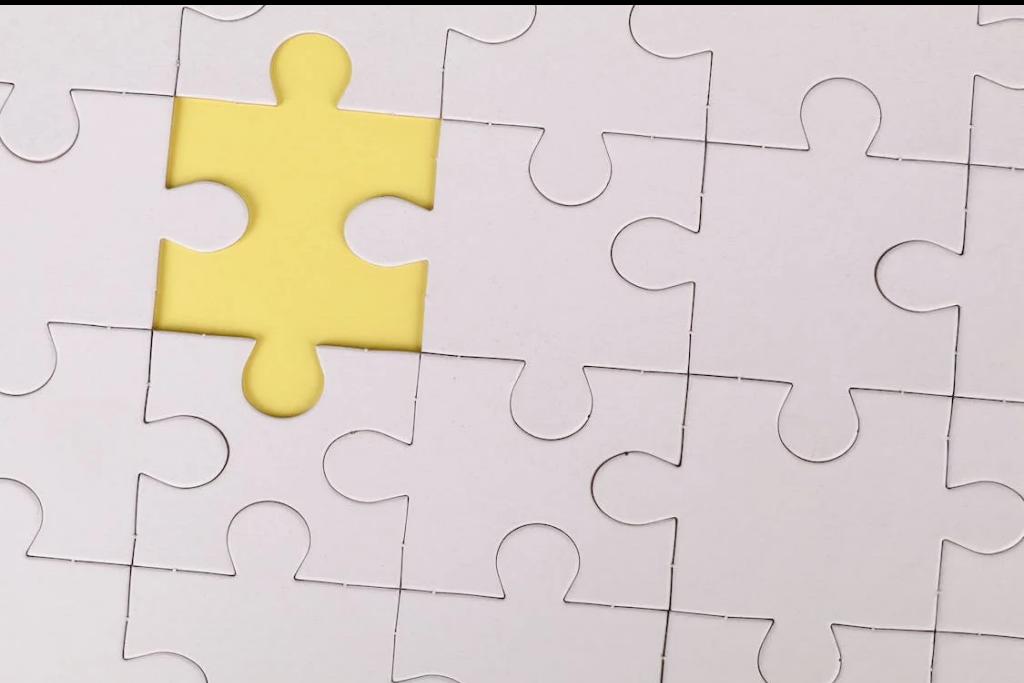
# Hardware support

## Supported



- Seco's NXP i.MX8 (Cortex A + M Linux + Zephyr), Intel and Rockchip (Linux)
- QEMU 32 and 64, Intel, Arm, RISC-V
- Raspberry Pi (Linux)
- Arduino Nano BLE (Zephyr)

# Interoperability, connectivity, ... middleware



- Project Matter SDK 1.0 (protocol)
- OpenThread 1.3 (transparent gateway)
- OpenHarmony (devices interoperability)
- Podman (containers)
- ModBUS (industrial IoT)
- LVGL / Flutter (UI portability)
- SysOTA

# Devices interoperability with OpenHarmony

- OpenHarmony features packaged into meta-openharmony layer
- IP analysis and audit ongoing, ETA for release end of 2022
- When included, meta-openharmony turns Oniro into OpenHarmony Compatible
- Screens and cameras cooperation
- New graphical framework for smoother UX and animations
- LiteOS Cortex M55 support and AI coprocessors
- Distributed data object capabilities



# Distributed devices agency (anyone knows Eddie?)



- Working implementation on Linux and Zephyr
- Communication and virtualization layers
- CoAP based resource directory
- Integrated into doorlock and smart panel blueprints

# Compliance envelope, verification and validation

- OpenChain and OpenSSF
- Continuous license compliance with dashboard and SWBOM for supported configurations
- LAVA (Linaro Automation and Validation) with central server and peripheral hw labs nodes



## Oniro's IP team rocks!

- ~4M source files audited in 9 months
- 98% coverage
- ~100 issues uncovered and filed with relevant upstream(s)
- Yocto multilayer fetcher and override
- Scancode and Fossology import improvements into pipeline
- Complete restructuring of pipeline and deeper integration with gitlab
- Automatic generation of SWBOM per release image



# V&V integrated into Oniro's release process



- Test plan with 100% coverage of release epics
- 80% release epics tested with 85% pass rate
- LAVA nodes included in automation testing
- Bug triage process between dev and test and maintenance
- Checkbox devices integration



# System OTA

- Hawkbit devices updates campaigns management
- RAUC integration with Hawkbit
- RAUC bundles integrity checker
- RAUC interaction with boot storage and reboot results
- State update backup
- NetOTA



# Thank you

