

# Feedback Wanted:

What features and design choices are needed for an  
Industrial IoT SBC?



**balena**

FOSDEM 2021

# Speakers

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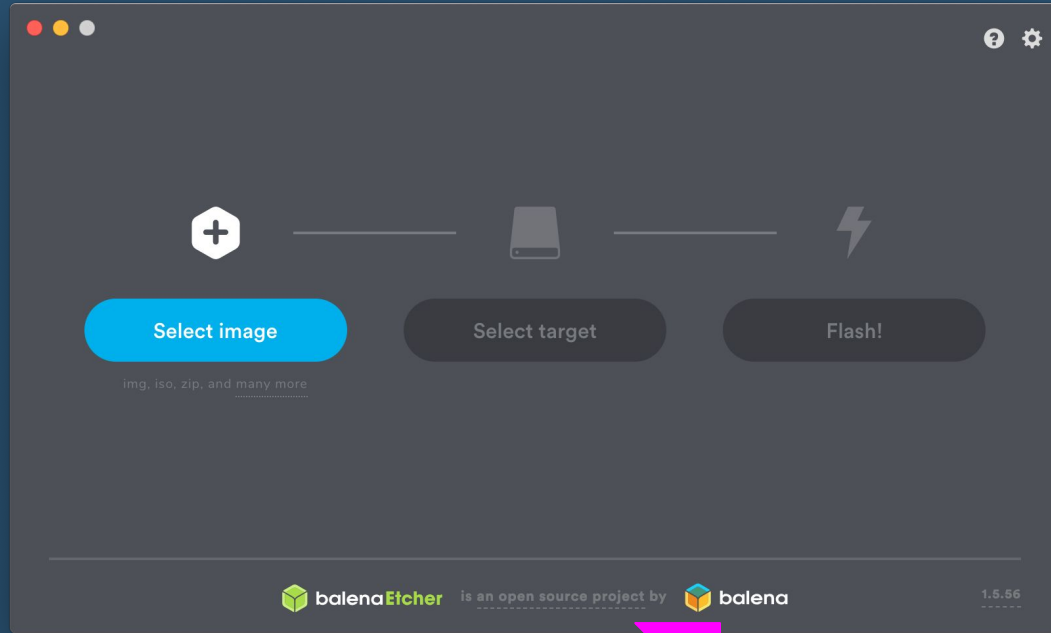
Nico Tzovanis  
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# Who is balena?



# Etcher, anyone?



# balena

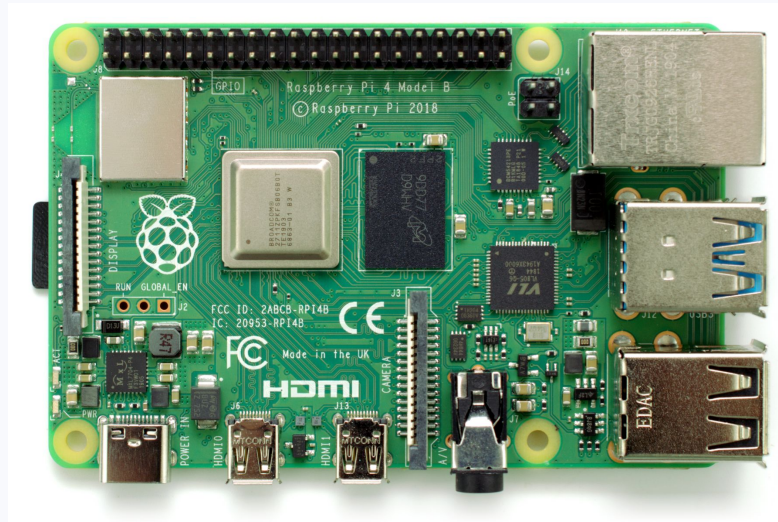
“Platform built to develop, deploy, and manage fleets of connected devices at scale.”

- balenaCloud
  - Web-based dashboard to control IoT devices and Applications
  - Terminal access to devices, logs, container build info, and more.
  - 50+ devices supported, each with purpose built OS and container runtime



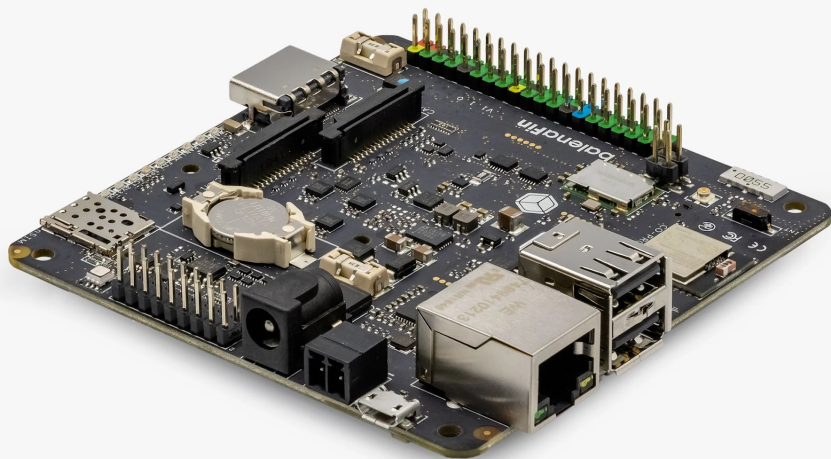
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# Did someone say IoT?



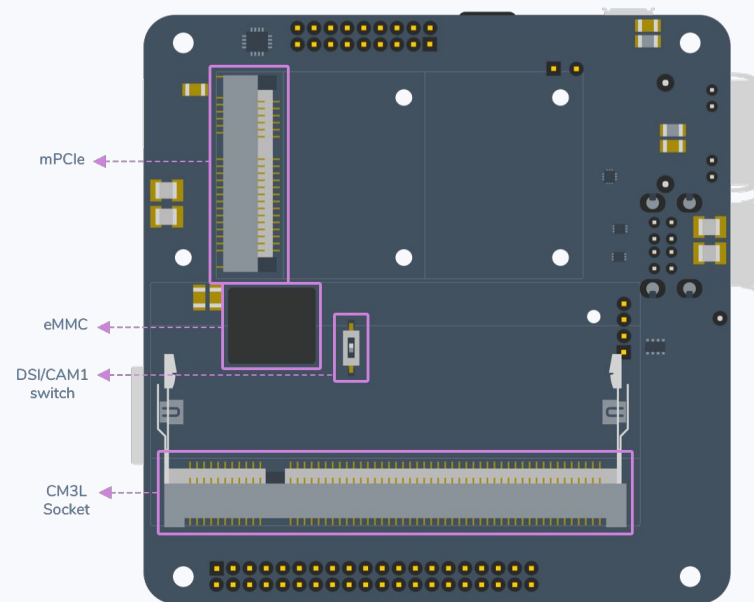
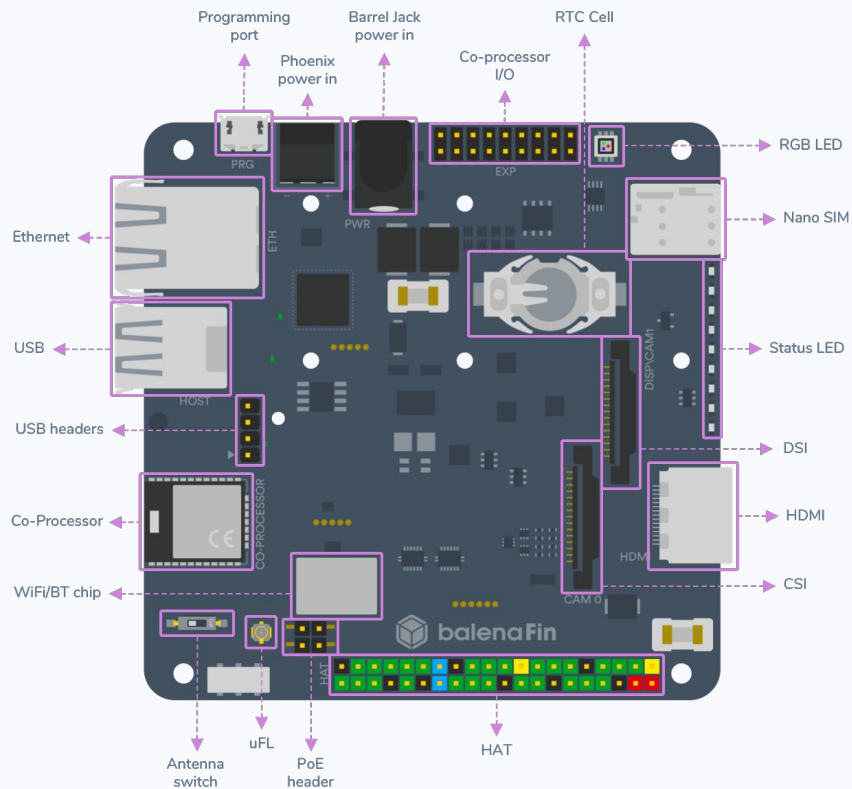


# balenaFin





# balenaFin





# Why are we talking today?

balena leverages, and produces, a lot of open source software.

On the hardware side of the organization, we want to replicate as much of that openness as possible, so our design process is all done in the open as well.

- Etcher (flashing utility)
- balenaOS (Yocto-based operating system)
- balenaEngine (Moby-based container runtime)
- OpenBalena (IoT Fleet Management)



# Current State: The Fin 1.0 / 1.1

Targeting the IoT use case, while maintaining Raspberry Pi compatibility via a Compute Module 3 SoM.

This simplifies the developer experience, and makes it easy to go from prototype to production.

- 12 - 24V power
- eMMC
- RTC
- Coprocessor (M4)
- mPCIe
- Sim Card Slot
- Deep Sleep



# Lessons Learned

Designing, manufacturing, selling, and supporting a board is hard.

- Fin 1.0 → Fin 1.1
- USB Shutdown Issue
- Global Logistics
- Vendor Selection
- Development Tools
- Closed vs Open Source



# Hardware selection for Fin 2.0

Remain in the Raspberry Pi ecosystem,  
and upgrade to the Compute Module 4.

All about expansion:

Modules, Connectors, HATs

- CM4
  - USB 3
  - Cortex A72
  - New connectors
- MikroBus
- (m)PCIe ?
- Coprocessor
- Form Factor



# Is Raspberry Pi compatibility important?

Could (Should) we transition to another SoM?

- **Sheer number of:**
  - HATs
  - Expansion boards
  - Software libraries
- **Developer Experience**
  - Business Experience
  - Prototype to Production
- **Brand Recognition (?)**



# OSHW and designing in KiCad?

Do folks really go and fab their own boards? What production volume does this make sense for?

- Have conversations like this one
- Continue engaging with the community
- Provide datasheets
- or...
- Publish full design
- Certify OSHW



# Community Collaboration

- Forums: <https://forums.balena.io/c/balena-fin/>
- GitHub: <https://github.com/balena-io-hardware/balena-fin-pcb>
- IoT Happy Hour: <https://youtube.com/balenaio>



# Shameless Plug



Weekly IoT hangout & freeform chat

Fridays | 4 PM UTC







# Questions / Q&A