



Lessons Learned Managing Nearly 500,000 IoT Devices

Embedded World 2023 - Nuremberg - 14th of March 2023



*** fleet owner** (n.): the person responsible for building and managing groups of connected IoT (Internet of Things) devices.



Why do every fleet
owner need fleet
management tools?



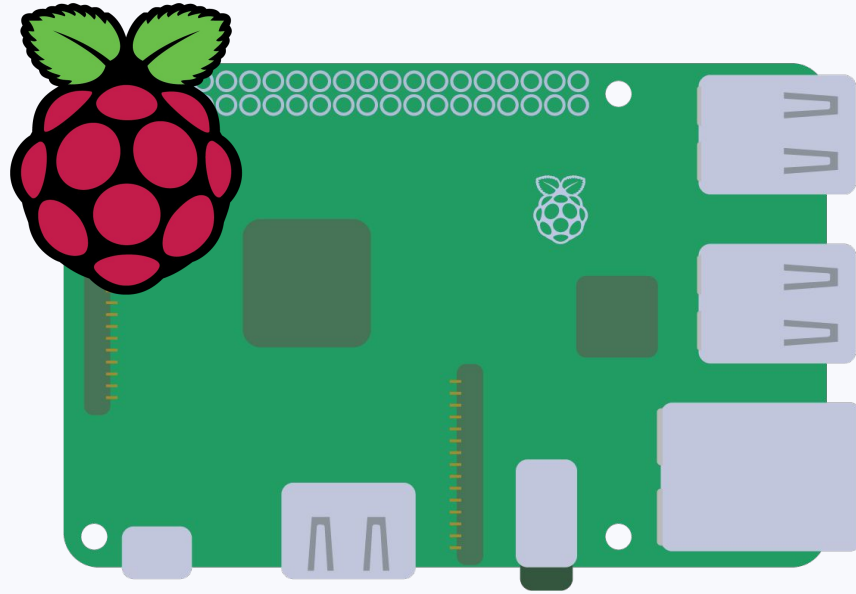
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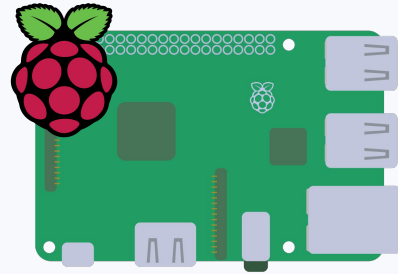
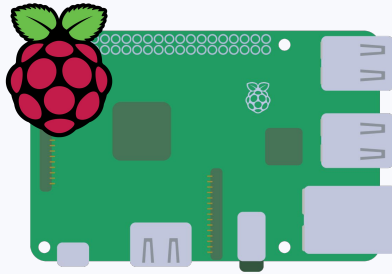
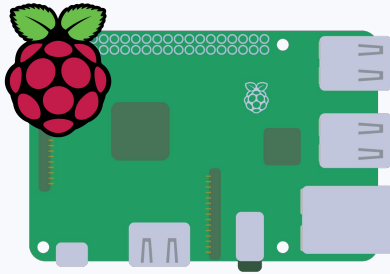
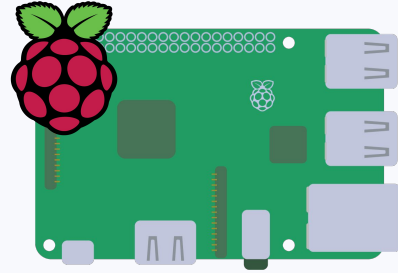
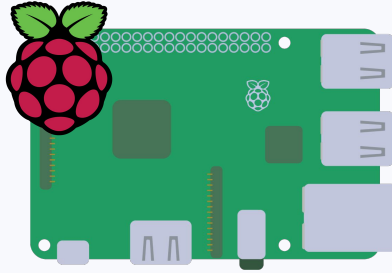
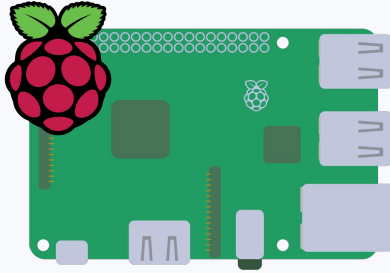
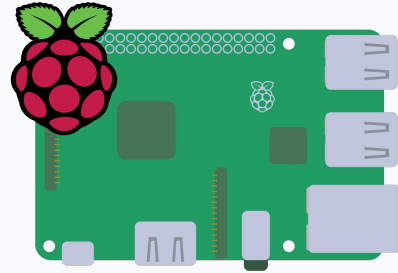
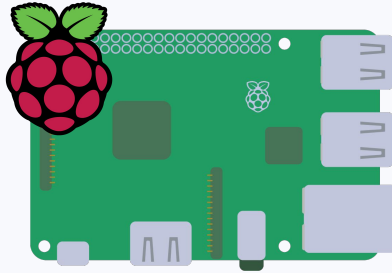
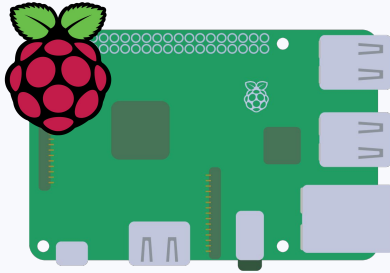
1. Software and HostOS updates.
2. Device Management Tools (FDE, SSH, logs, diagnostics, and more)
3. Take advantage of modern tools (containers, CI/CD, open source and more)

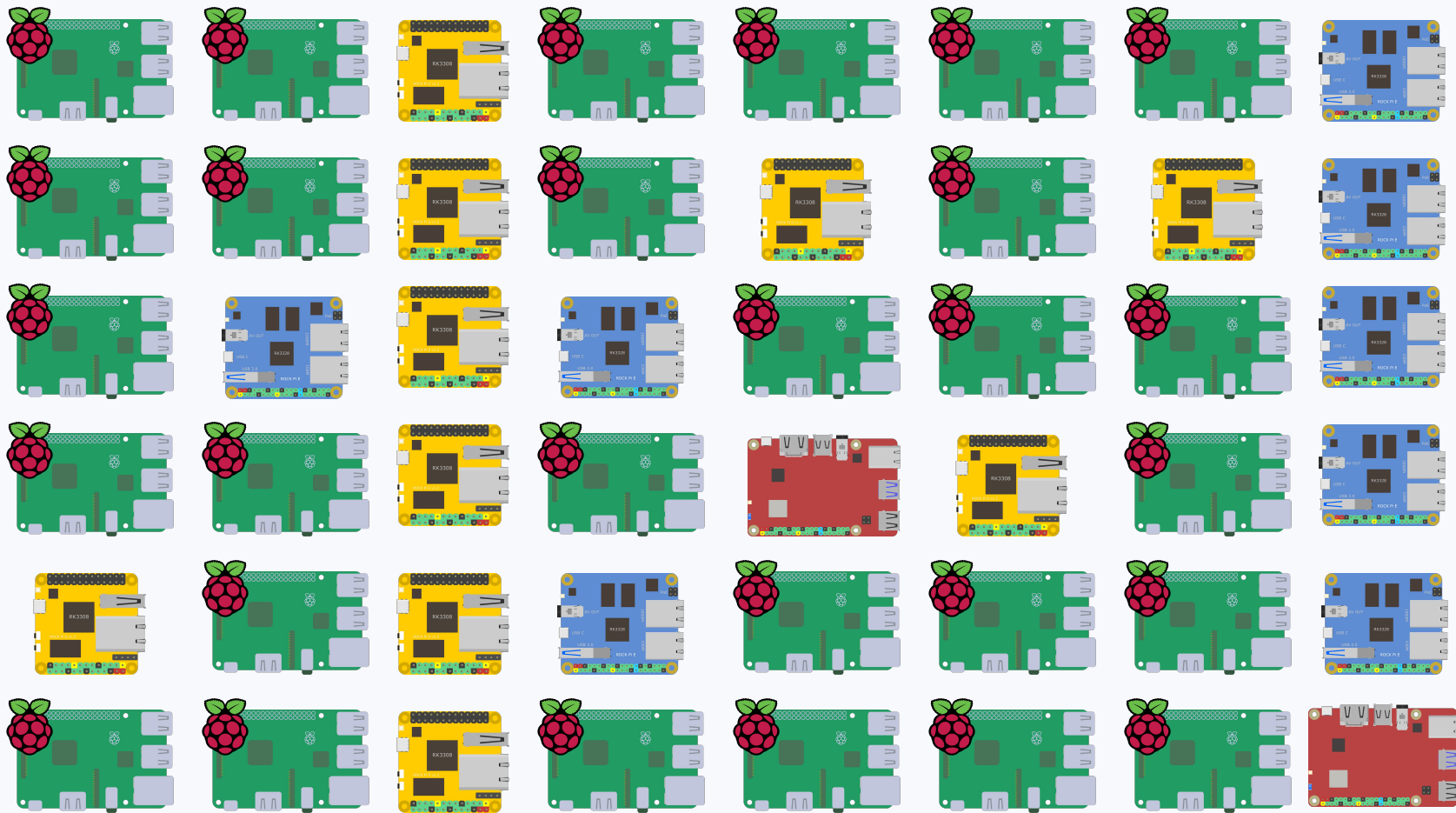


What do you mean by
“Fleet management” ?



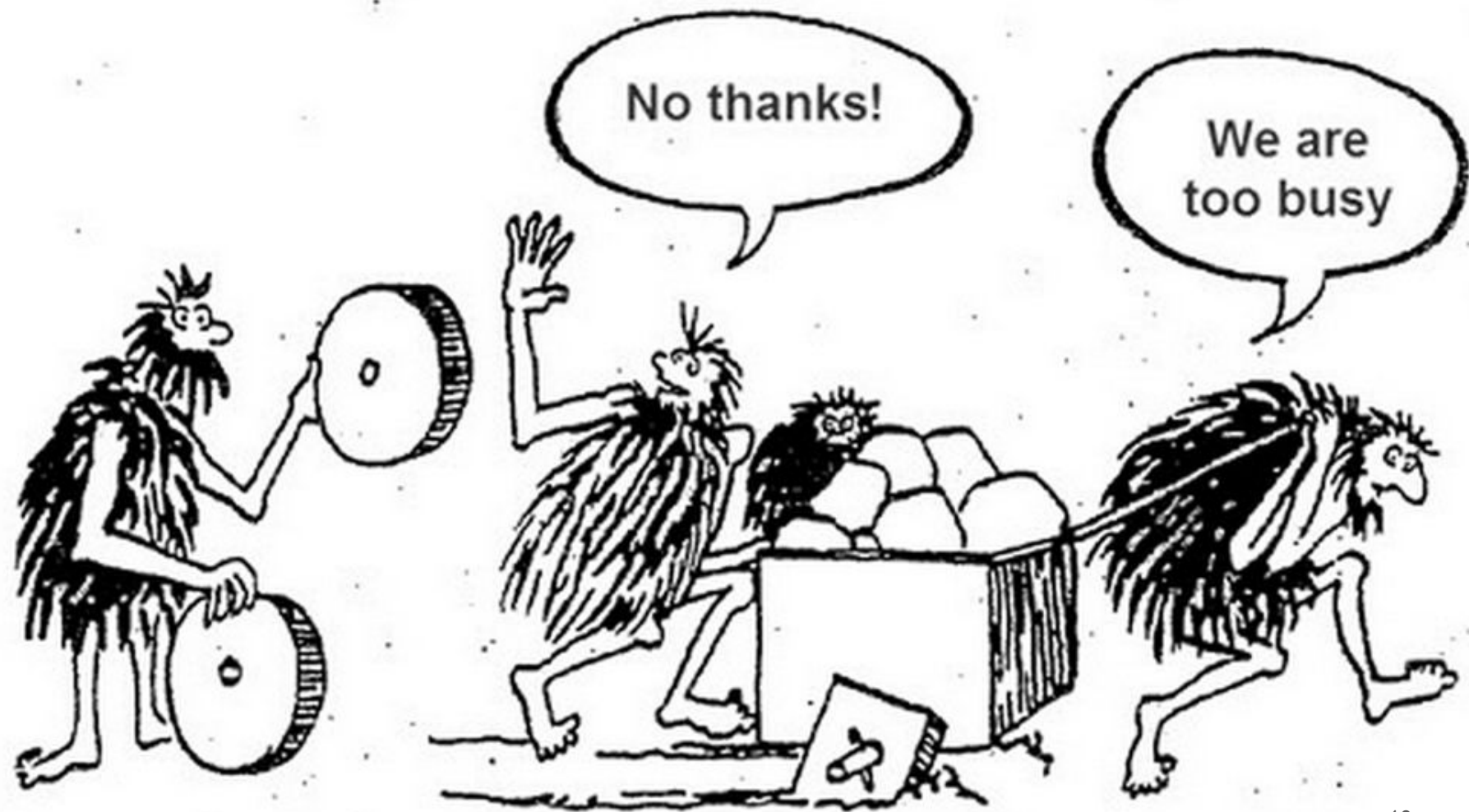






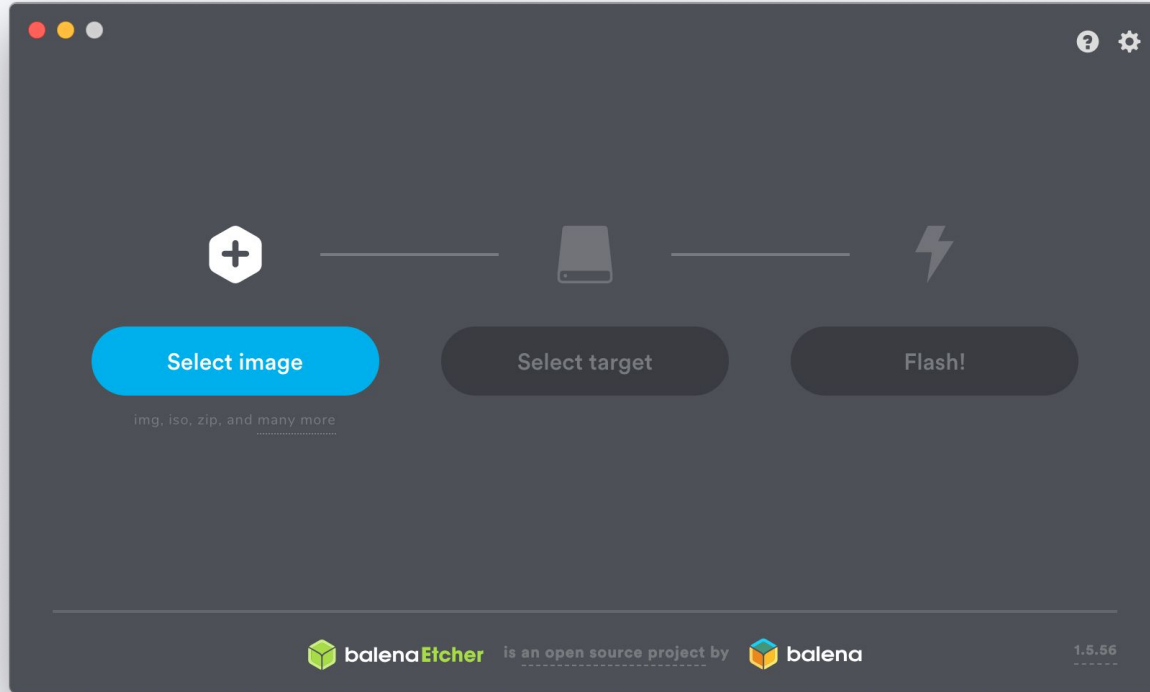
Now, how do you
manage 500, 50.000
or 500.000 of these?

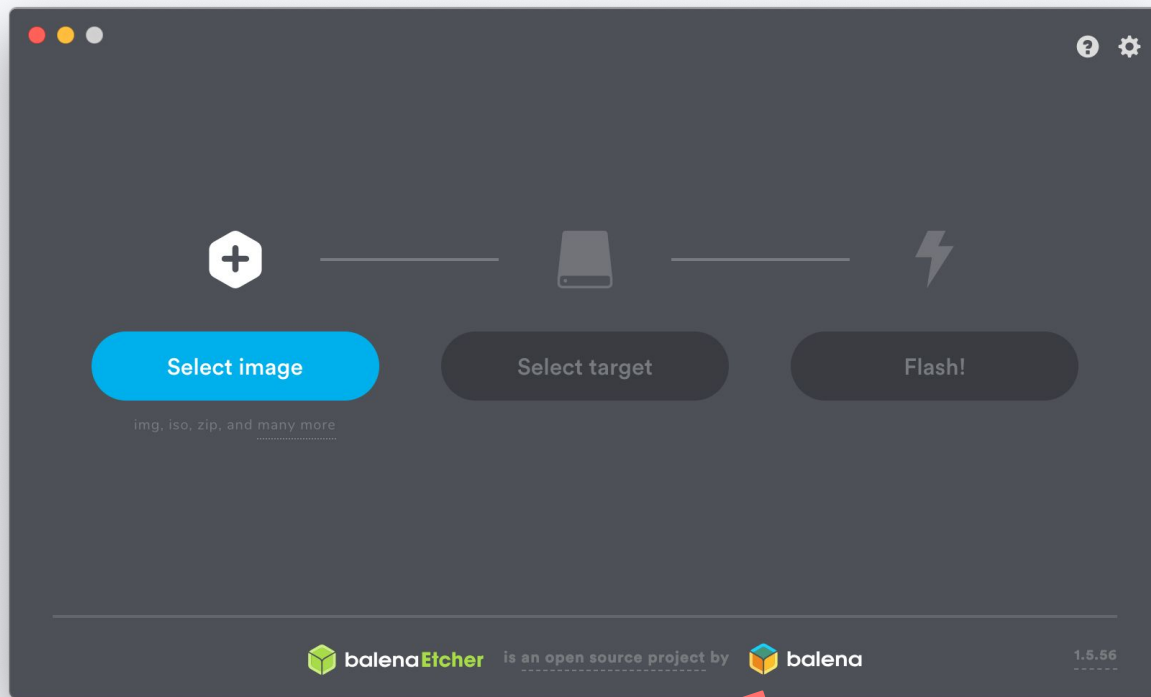


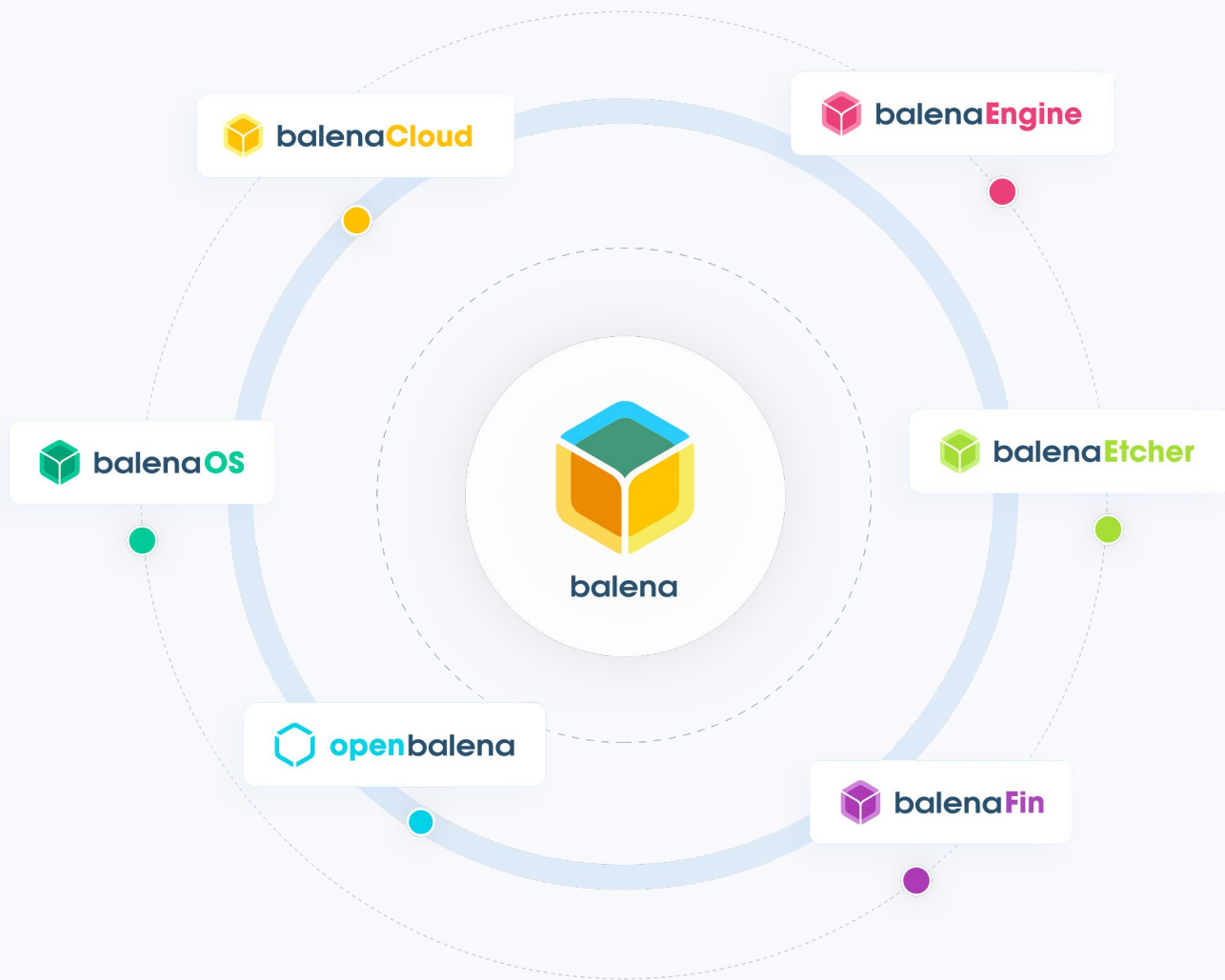


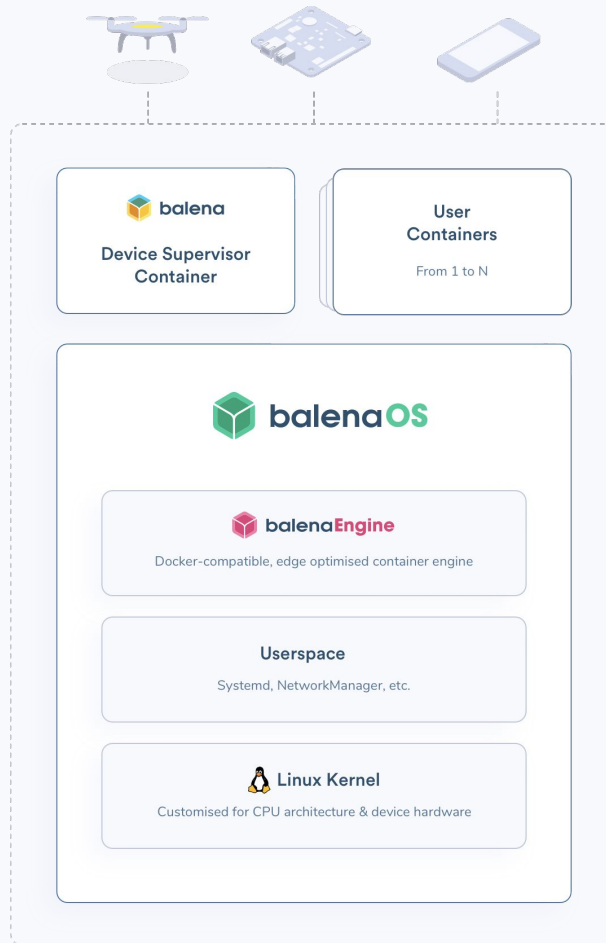
The Die Hard method...











Lessons Learned ...



A photograph of three young women standing in a field of colorful flowers, seen from behind. They are embracing each other. The woman on the left has long dark hair and wears a light blue floral top and denim overalls. The woman in the middle has long brown hair and wears a grey knit top. The woman on the right has short brown hair and wears a red and white striped shirt and denim overalls. The word "SUPPORT" is overlaid in white capital letters in the center.

SUPPORT

A man with a beard and a light blue cap stands in a field of dry grass. He is wearing a light-colored t-shirt with orange stripes on the sleeves and brown trousers. He has his arms crossed and is holding a long wooden staff. In the background, there is a herd of brown and white cattle. To the left of the man, a small black and tan dog is standing. The background shows a line of trees under a clear sky.

PET vs CATTLE

On the IoT there is
no silver bullet...



- Hardware
- Connectivity
- Software



Hardware

- What are your constraints? (environment / power / size / price)
- Physical access to the hardware?
- What's your memory? SD cards? No please!
- Chip Shortage creates more multi-device types fleets.



Connectivity

- How is the device connected? Do you have enough bandwidth?
- Do you have a backup connectivity?
- Do you have more devices connected to the same network?



Software

- Do you have remote access to your devices?
- Can you run Diagnostics remotely?
- Can you deploy remote updates? (applications, OS and others)
- Do you have test environments? CI / CD?
- Can you pre-schedule updates?



Let's wrap-up!



Why do every fleet owner need fleet management tools?

1. Software and HostOS updates.
2. Device Management Tools (FDE, SSH, logs, diagnostics, and more)
3. Take advantage of modern tools (containers, CI/CD, open source and more)



- **Do not** reinvent the wheel.
- Work with great partners and production grade hardware.
- Embrace **open source**.





Questions?



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