

Embedded IoT with Meadow



Greater Seattle .NET Meetup

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IoT Production Lifecycle

Idea -> Production

Lifecycle Overview (not set in stone)

Bench Prototype - Initial prototype using [similar hardware].
Breadboarded, etc. (1-2wks)

Lab Prototype - Actual hardware, or close. Some 3D printing, etc. (1-2mos)

Field Prototype - Final hardware, enclosure, PCB, still patched together

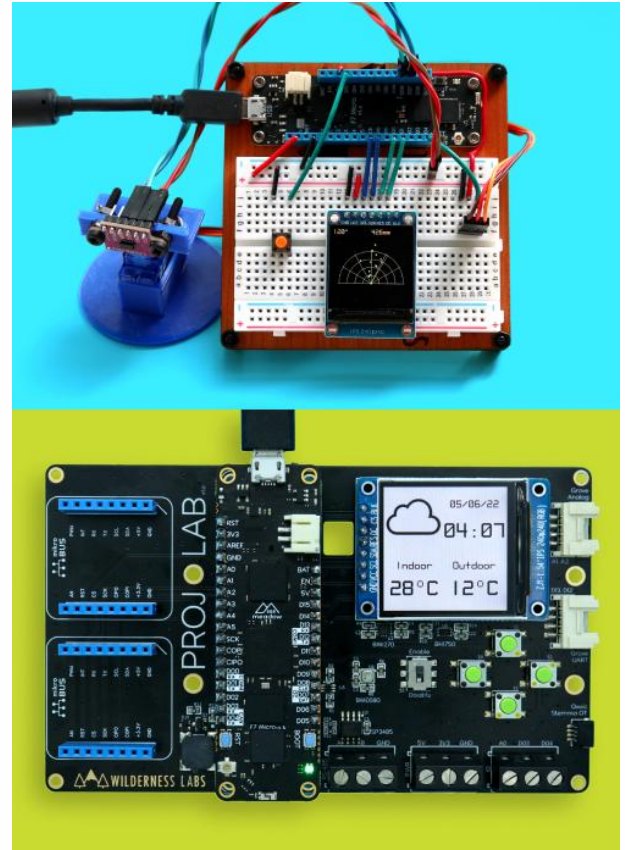
Production Beta - First internal/Beta customer tests

Production - Optimized for volume

Total ~24 months!

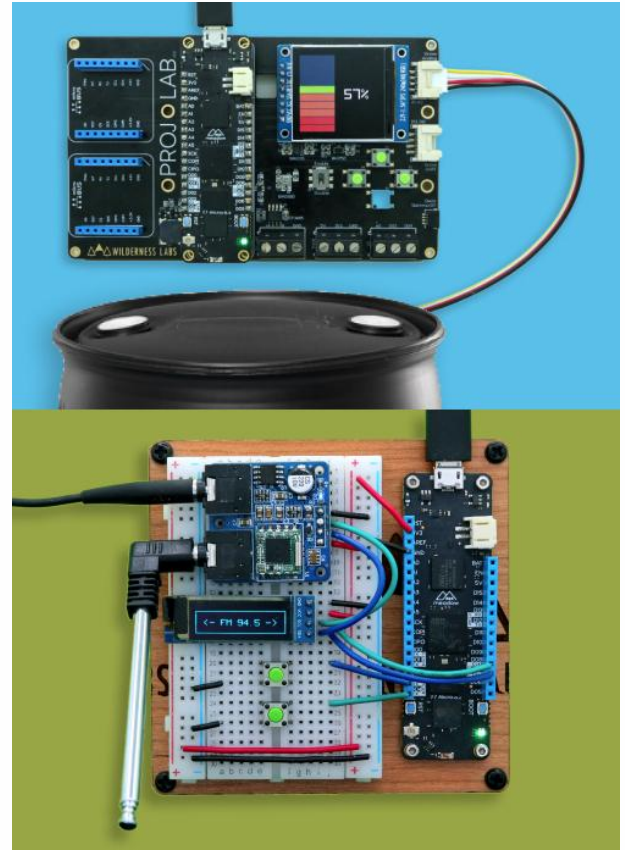
Bench Prototype

- Meadow Dev Kit or Project Lab for faster prototyping
- Initial prototyping could be built with cheaper components to make a PoC
- For instance, final solution might use maxBotix distance. but bench might use cheap ToF.



Lab Prototype

- Mostly final hardware, peripherals/sensors
- For use under supervision/lab conditions
- Maybe no enclosure, or custom PCB. Can still be stuck together with tape and zip ties.



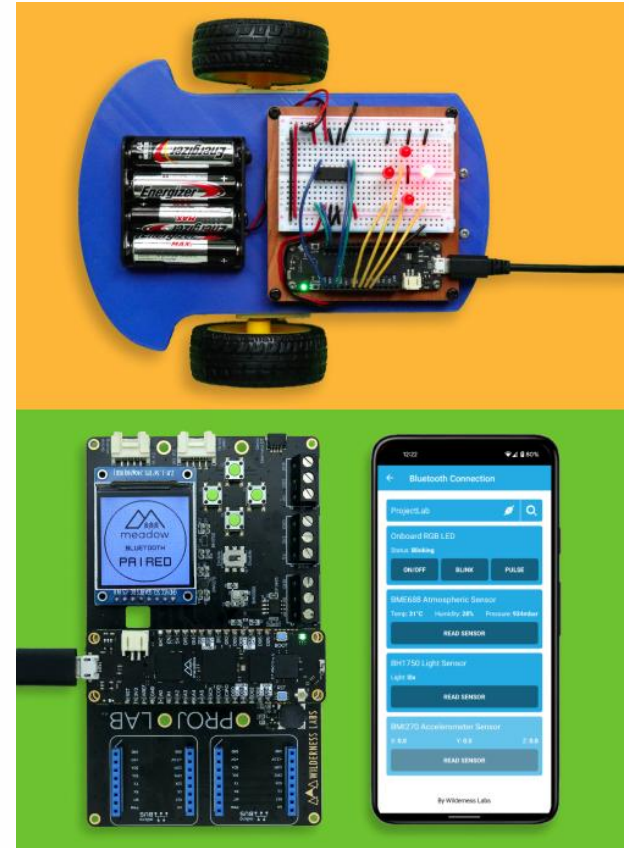
Field Prototype

- Initial field testable prototype
- Custom PCB with most integrations
- Basic enclosure, but not final mechanical or industrial design



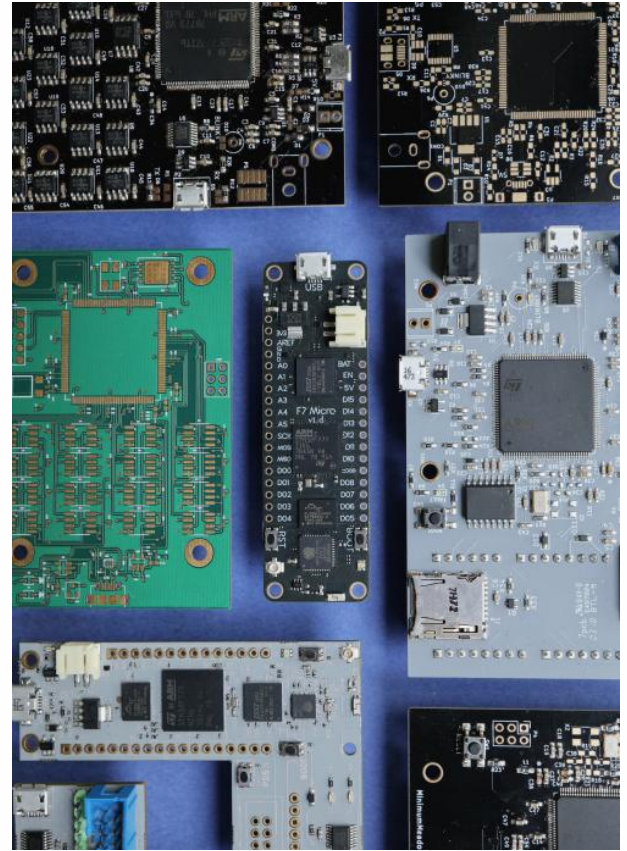
Production Beta

- First customer-tested devices (internal/external)
- Maybe not final ID/MD, but probably some
- No plan survives contact with the enemy



Volume Production

- Public release
- Fully integrated, final ID/MD
- Optimized for volume (if volume product)
- Maintenance life cycle begins



Unit Economics (\$100 Product)

Bench Prototype - 1-2 units, ~\$200/each

Lab Prototype - <10, \$2k-5k/each (lots of \$\$ for assembly, can be cheaper)

Field Prototype - 5-10 units

Production Beta - 10-1000 units

Production - 1k/10k/100k/etc.

10k is the economy of scale tipping point.

Production Pro-Tips

Getting to Production Faster

Project Lab - Use to prototype much faster. Also more reliable than breadboarding (zero risk of bad wiring peripherals)

Off-the-Shelf (OtS) Modules - Use OtS modules that provide core compute. [Supply chain is tricky.]

Thorough testing in Lab phase - cover as many scenarios as possible to avoid recalls or send fixed iterations to Beta customers.

Reduce from 24mos. to 6-9mos.

Demo Time!

Thanks!