

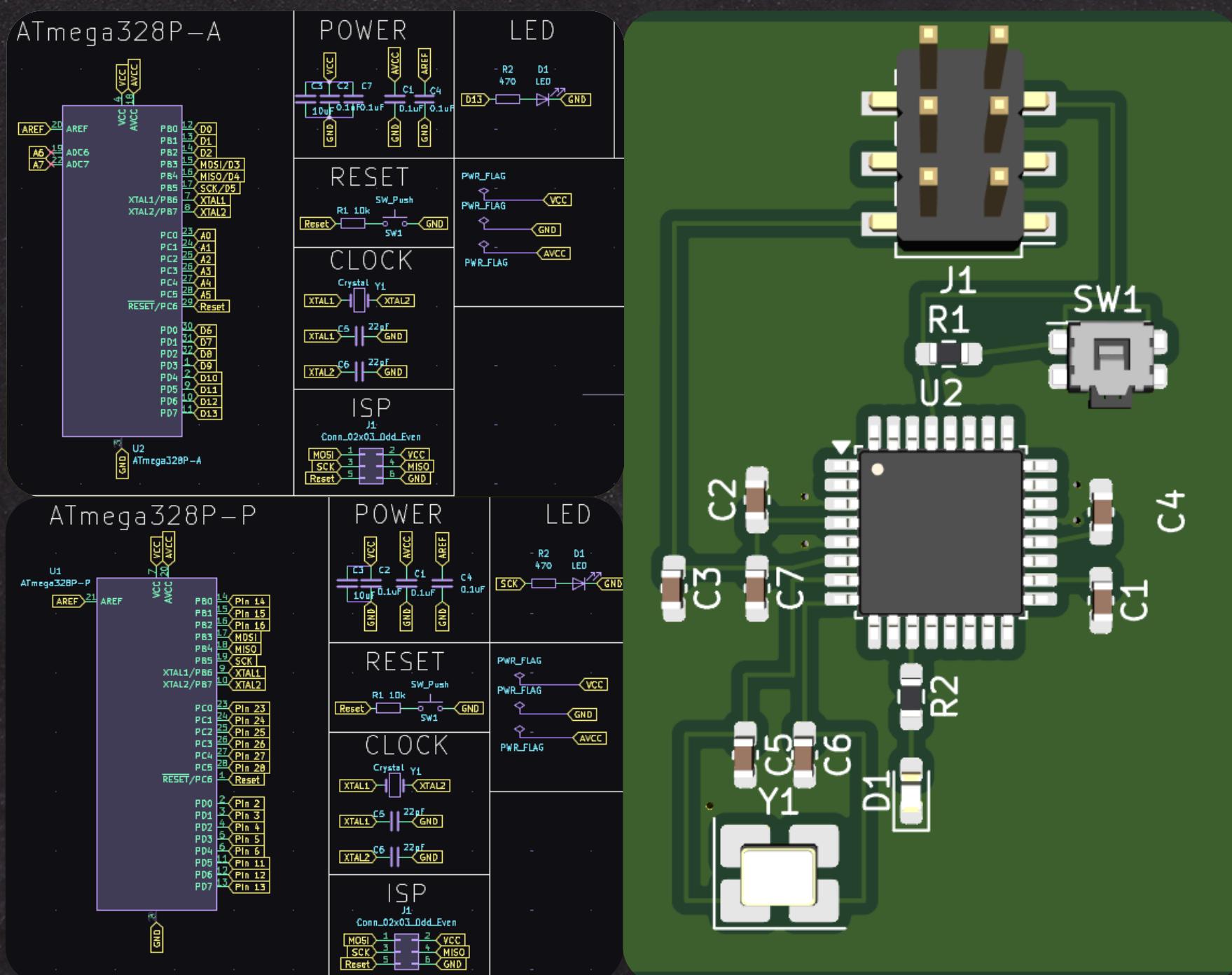
Finally...

A

PCB

It Started Small

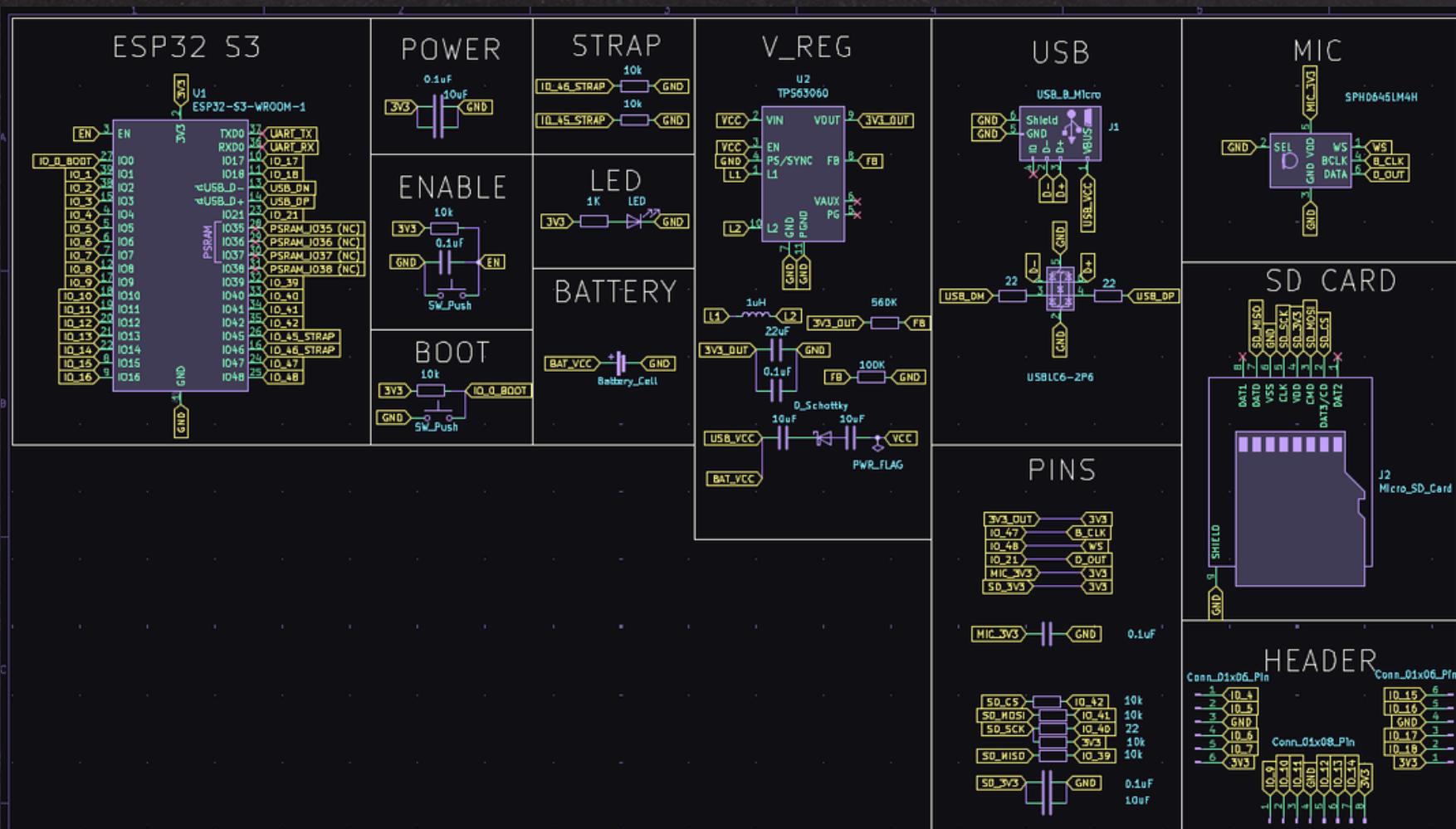
A simple choice on paper,
that opened up a much deeper
learning curve.



Next came the ESP32-S3.

More power,
More complexity.

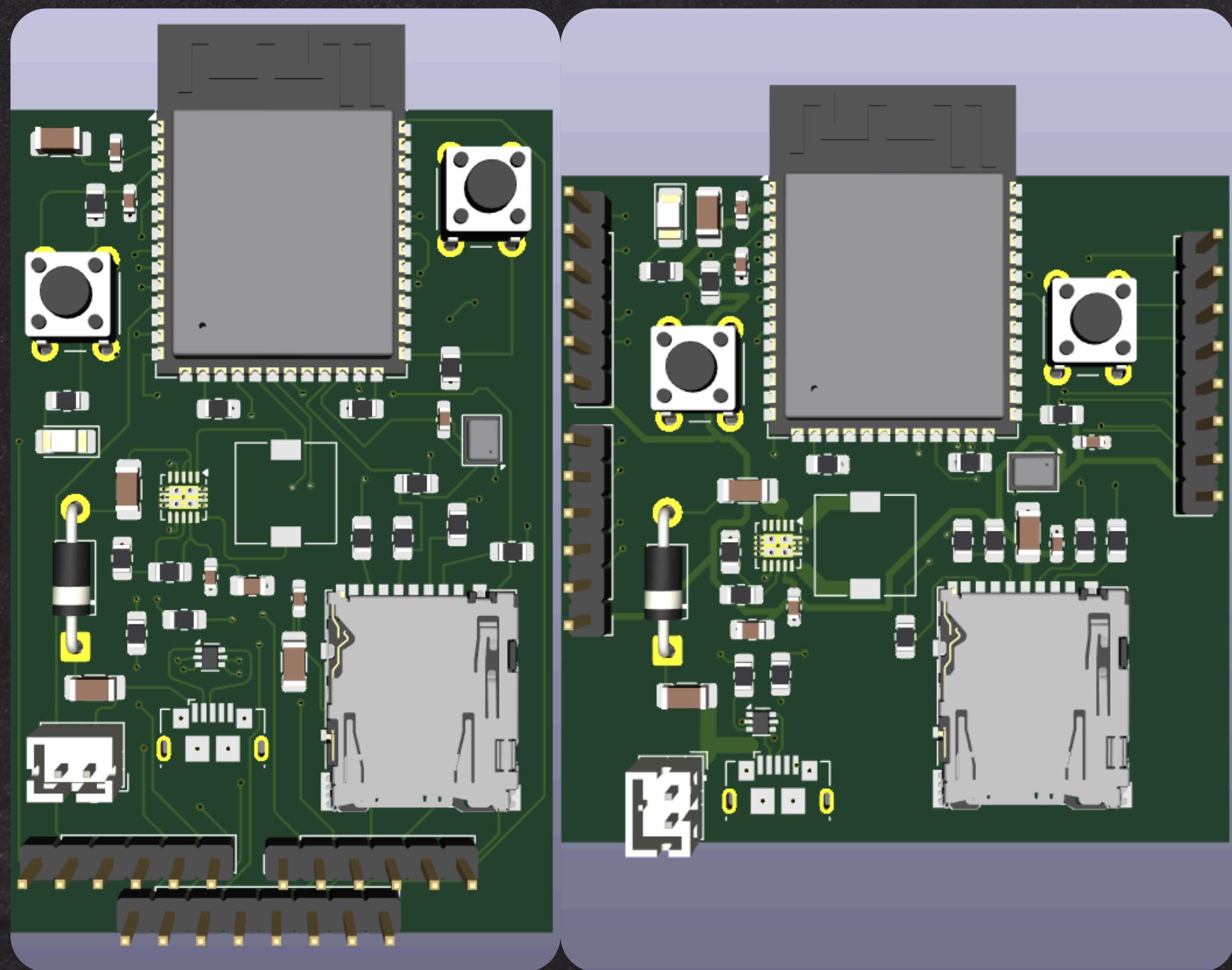
A complete Dev Board with SD card and
Mic and 20 useable Pins.



Error Modules

The board was trying to tell me something. I wasn't ready yet.

Fancy designs.
Poor fundamentals.



The Doubt Phase

I kept trying.
Watching. Reading. Asking.
Effort wasn't missing –
understanding was.

Solution

For the next try, I slowed down.
Broke the board into smaller parts.
Power first.
Then the MCU.
Then the Peripherals.

**And this time,
it worked.**

Messy But Real

- Datasheets matter more than assumptions
- Good design is planned before routing begins
- Grounding define stability
- Iteration is part of every working design
- Power and layout decisions shape real-world behavior

