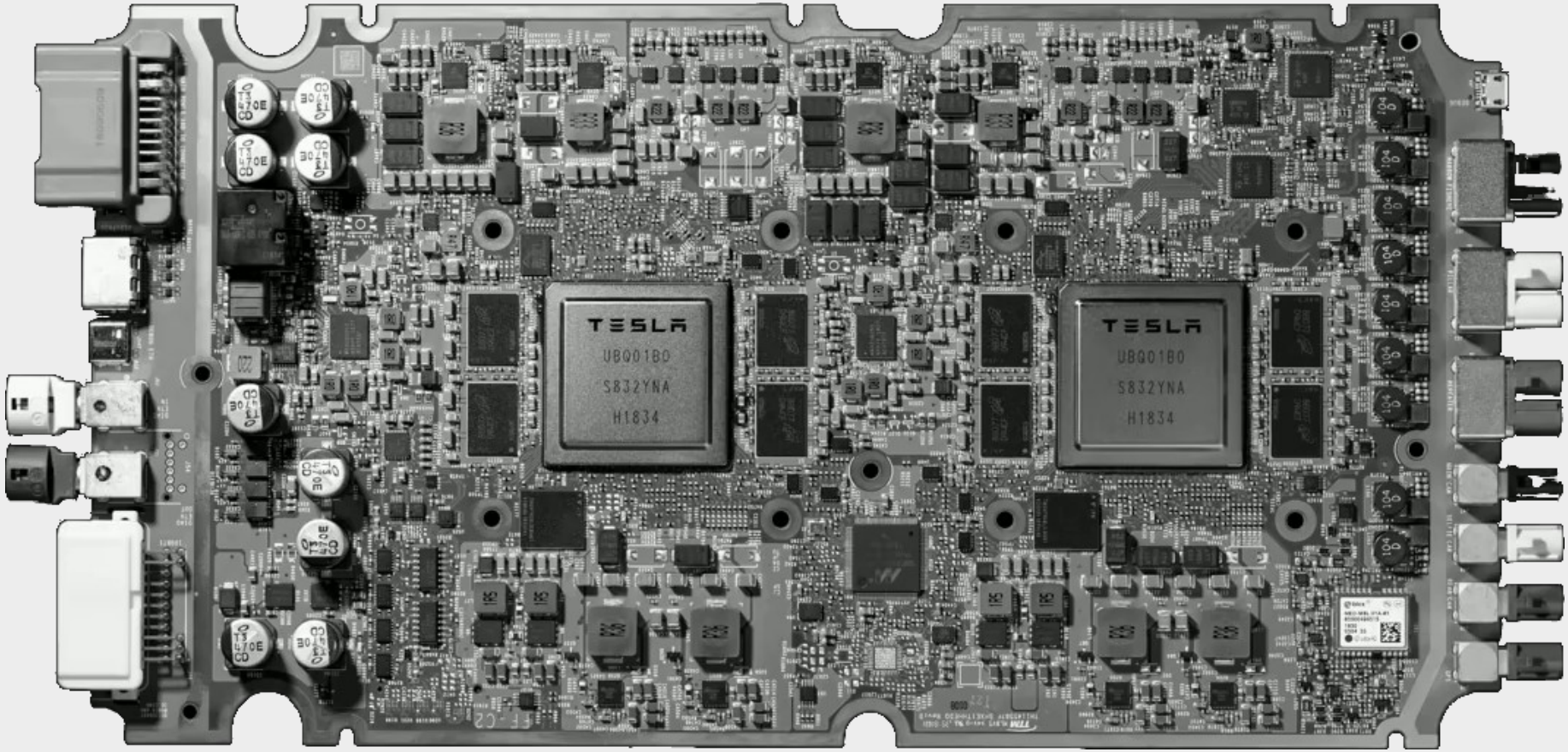
TESLA
FSD

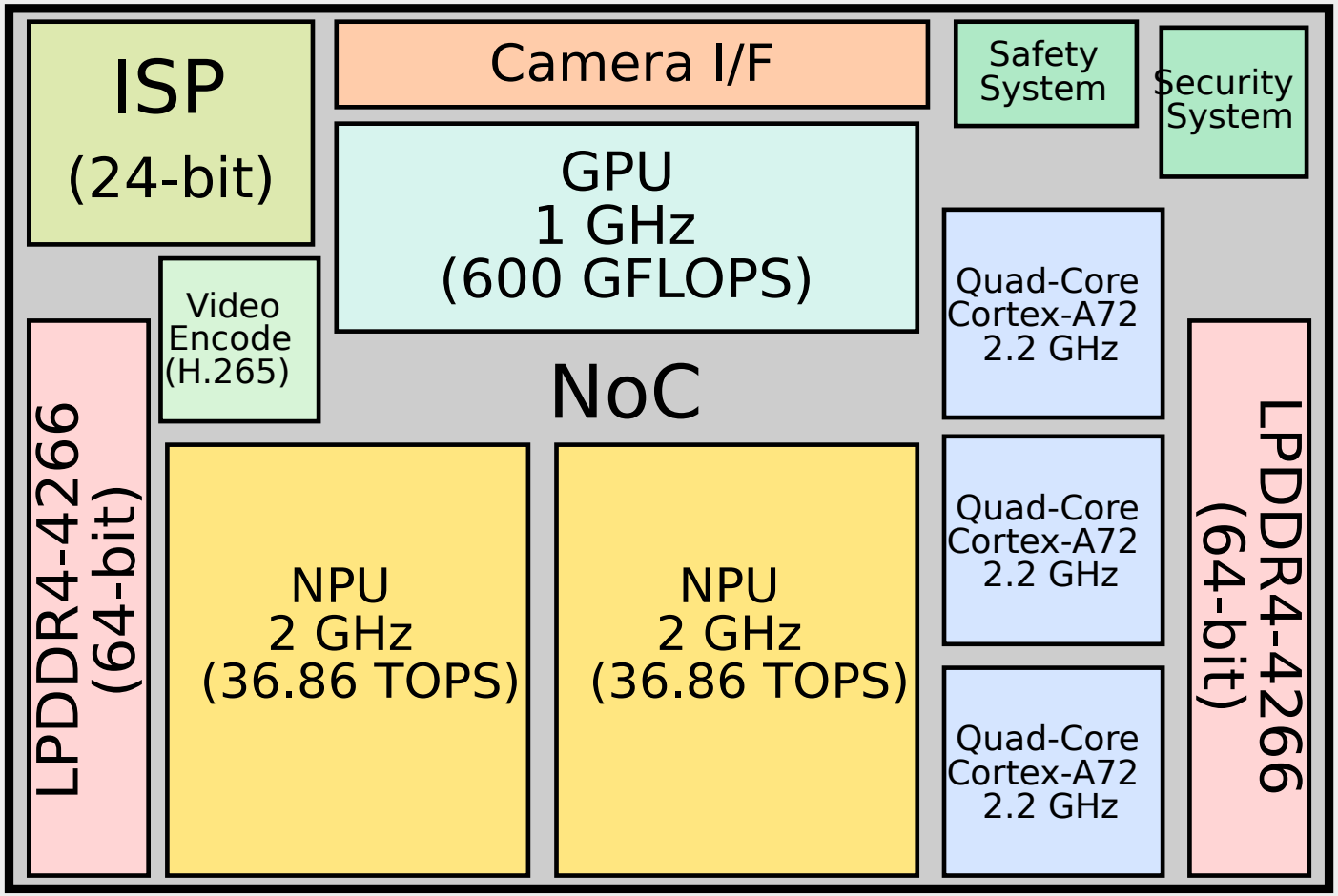
# STATS

- Start – Feb ‘16; End – Mar ‘19; Fitting – Dec ‘18
- Goals -
  - <100 W; Less power, power supply, heating
  - Retrofit existing cars
  - Lower Part cost; greater redundancy
  - 50 TOPS
  - Security and Safety

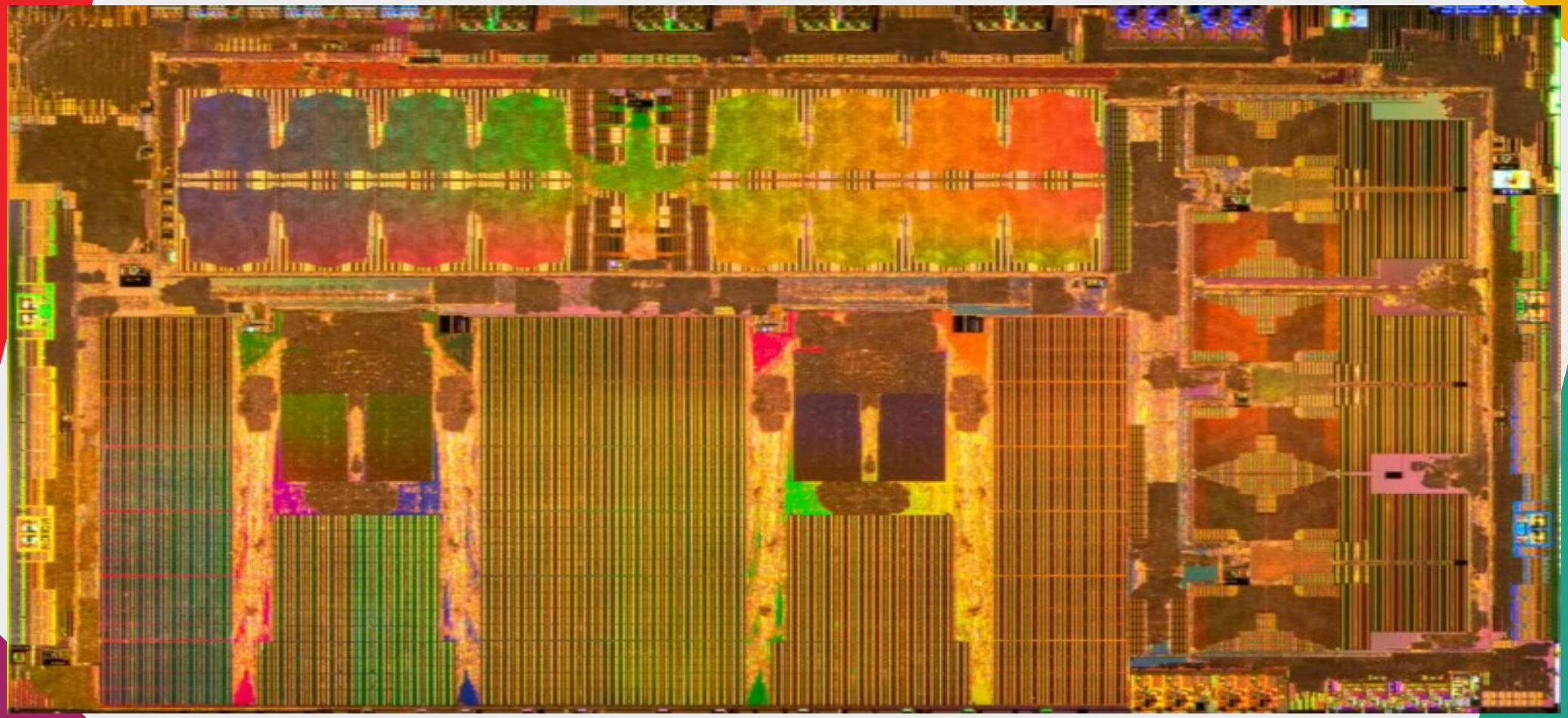
# The FSD Board



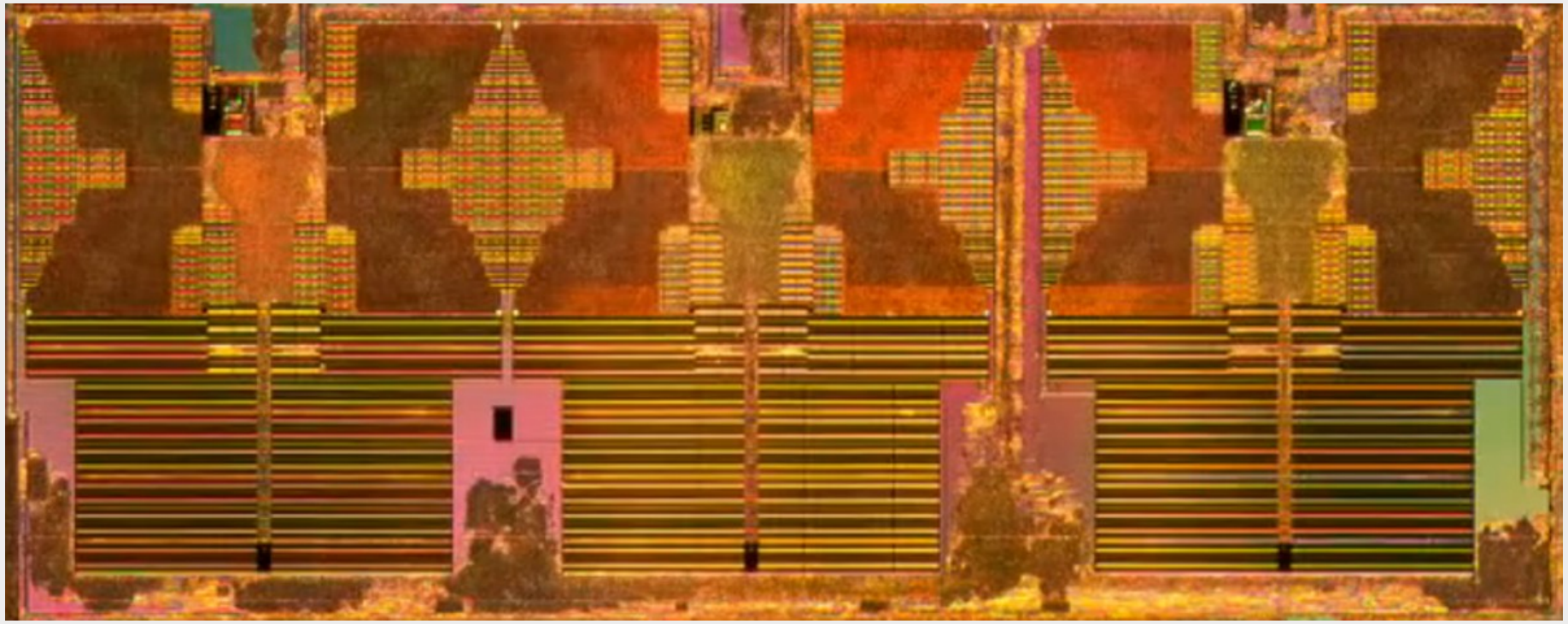
# FSD Block Diagram



# The FSD Chip

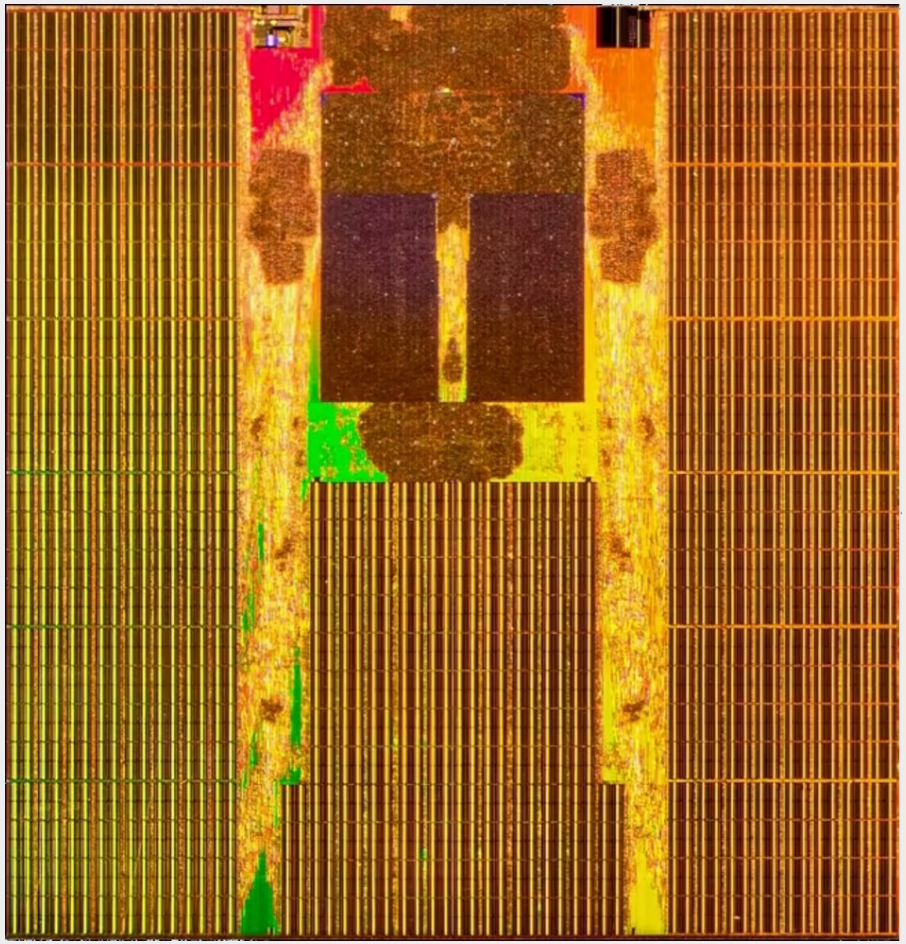


# The CPU

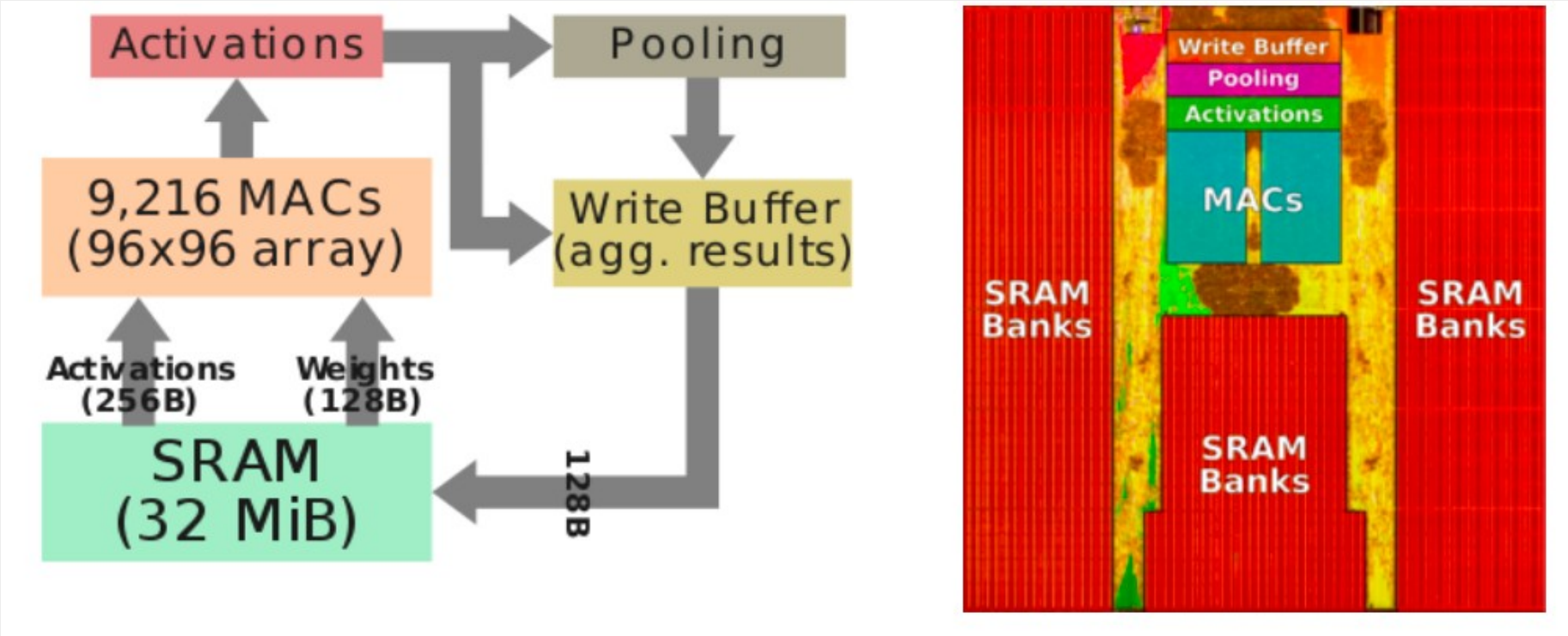


CPU - 12 ARM A72 CPU; 2.2 GHz
GPU – 1 GHz, 600 GFLOPS

# NPU



# The NNP




96x96 MACs can do 10^4 MAC/s
9216 MAC operations
2100 frames/s @35 GOPS
1 TB/s Bandwidth of SRAM

# Results

- Whole FSD – 72 W
- NNP – 15 W (out of 72 W)
- 21x faster than HW2.5

| Component | GPU | NPU |
|---|---|---|
| Amount | 1 | 2 |
| Peak Performance | 600 GFLOPS (FP32, FP64) | 36.86 TOPS (Int8) |
| Total Peak Performance | 600 GFLOPS | 73.73 TOPS |