



# Your Engineering Partner for AI Hardware

From concept to production -- BOM optimization, DFM, prototyping, and manufacturing. China supply chain expertise, global delivery.

**3,000+**

Component suppliers

**12 weeks**

Concept to prototype

**1,000**

Min pilot run

hello@breezehw.com | breezehw.com | Shenzhen, China

No equity. No MOQ surprises. Just engineering.

# Building AI Hardware Is Hard.

Finding the right manufacturing partner shouldn't be.

**80%** of hardware startups fail at the manufacturing stage.

## ❌ **Factories won't take your 1K MOQ**

Most factories want 10K+ units. We start at 1,000.

## ❌ **Unpredictable NRE costs**

You get a clear, fixed NRE quote before any work starts.

## ❌ **IP leaks and design theft**

NDA + IP assignment standard on every engagement. Your designs stay yours.

## ❌ **Language and timezone barriers**

Native English + Mandarin team. We work your hours.

## ❌ **No DFM feedback until late**

We run DFM checks at the design stage, not after you've committed to tooling.

## ❌ **Certification maze**

FCC, CE, UL, SRRC -- we handle the paperwork, testing, and timeline.

# Who's behind Breeze

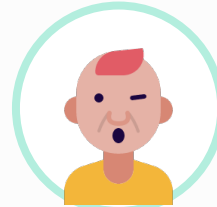
Four operators. 60+ combined years in Shenzhen supply chain, smart hardware, and cross-border delivery.



**Jett Fu**

Founder & CEO

15+ years cross-border operator. Founded AirPop -- smart air wearable launched at CES 2021, covered by Tom's Guide, Wired, Digital Trends. US (Delaware) + HK + Singapore entities. Native EN + ZH. Based in Shenzhen.



**Jank Liu**

Supply Chain + Quality Lead

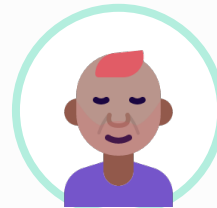
30 years across industrial valves, PCB, wire harness connectors, smart masks, and rail transit. GE Six Sigma Black Belt -- led HX-5 rail NPI. Amphenol Medical cross-border supplier development and compliance lead. Alumni: Tyco, Amphenol, GE.



**Sky**

Engineering Lead

10+ years in Shenzhen consumer electronics supply chain. Prototype to mass production for wearables, IoT devices, and audio products. Ground-truth knowledge of the supplier network within 50 km of our office.



**Arting Chen**

Partnerships & Deal Flow

AI hardware incubator and investor network. Qualifies deal flow and connects AI hardware founders with Breeze. Direct relationships with YC/HAX-adjacent teams building their first physical product.

# 10+ Years. Not a New Company.

Before Breeze Hardware, our team shipped production at scale:

## AirPop Active+ Halo

World's first smart air wearable -- CES 2021

Bluetooth respiratory sensor + iOS/Android app + certified mask manufacturing. Global retail launch via AirPopHealth direct + national retailers.

### PRESS

Tom's Guide, Hypebeast, Digital Trends, Wired

## Cross-Border Supply Chain

Customs, logistics, international delivery

Deep fluency in import/export customs clearance, HS-code classification, commercial invoicing, multi-modal freight (ocean, air, rail), bonded warehouse coordination, and destination-country fulfillment into US, EU, LATAM, and APAC.

## EU Medical Packaging

Hospital surgical tray systems

Regulated medical device packaging -- material sourcing, sterility validation, third-party lab testing, and full compliance documentation for EU hospital systems.

### Full disclosure.

Breeze's co-founder Jett Fu is AirPop's founder & CEO. AirPop Halo was delivered by the same supply-chain and engineering team now powering Breeze.

# Concept to Production in 6 Steps

A clear, predictable path from your idea to manufactured product.

01

## Scoping

Share your concept. We assess feasibility, BOM, and ballpark cost.

02

## Engineering Design

Schematic, PCB layout, mechanical design, firmware architecture.

03

## DFM & Prototyping

Optimize for manufacturability. 3-5 functional prototypes.

04

## Tooling & Sourcing

Injection molds, jigs, fixtures. Component sourcing from 3,000+ local suppliers.

05

## Pilot Run

50-500 units. Test assembly line, QC process, packaging.

06

## Mass Production

Scale to 1K, 10K, 100K+. Ongoing QC, logistics, fulfillment.

**12 weeks**

Avg concept-to-prototype

**\$26.40/unit**

AI pendant example

**50-500**

Pilot run units

# Cost Reality Check

Real BOM breakdown for a \$99 AI wearable pendant (@ 5K units)

**\$26.40 / unit**

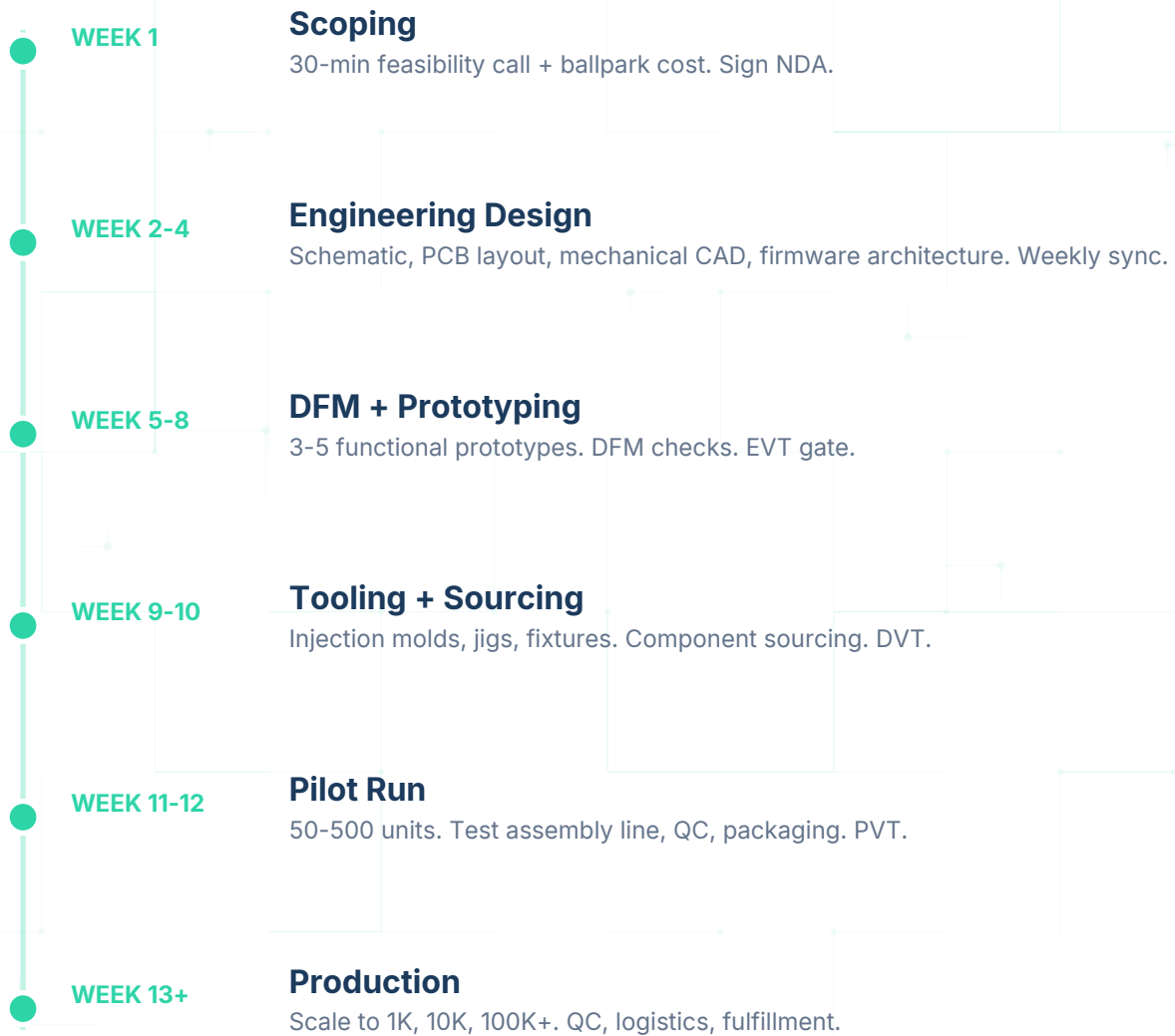
avg landed cost (incl. assembly + packaging)

Component	Example	Cost Range
SoC / MCU	ESP32-S3 / nRF5340	\$1.80 - \$4.50
Memory (Flash + RAM)	4MB + 512KB	\$0.60 - \$1.20
Microphone Array	MEMS x2	\$0.80 - \$2.00
Speaker / Haptic	Micro speaker + LRA	\$0.50 - \$1.50
Battery (LiPo)	250mAh pouch cell	\$1.20 - \$2.50
BLE + Wi-Fi Antenna	Chip antenna / FPC	\$0.30 - \$0.80
PCB (4-layer HDI)	30x25mm, ENIG finish	\$0.80 - \$1.50
Enclosure (injection)	PC/ABS, 2-shot mold	\$0.60 - \$1.20
Connector + Misc	USB-C, pogo pins, ESD	\$0.40 - \$0.80
PCBA Assembly	SMT + manual + test	\$1.50 - \$3.00
Packaging	Box, insert, manual, cable	\$0.60 - \$1.20
<b>TOTAL (@ 5K units)</b>		<b>\$9.10 - \$20.20</b>
<b>Landed Unit Cost*</b>		<b>\$26.40 avg</b>

\* Landed cost includes BOM + PCBA + packaging + testing + 5% yield buffer + freight to US warehouse.  
Excludes NRE (one-time engineering), tooling amortization, and certification fees.

# What happens after you sign

A predictable 12-week path to pilot. Transparent weekly sync.



## Fixed-price at every gate.

EVT, DVT, and PVT gates each have defined deliverables and sign-off. No T&M. No scope-creep invoices. Weekly status sync on Fridays with photos, videos, and next-week plan.

# Typical Project Costs

Fixed-price at every stage. No T&M. No scope-creep invoices.

## Scoping Free

Initial concept review.  
30-minute call plus a  
one-page feasibility note.

- ✓ Device feasibility assessment
- ✓ Ballpark BOM range
- ✓ Certification needs summary
- ✓ Timeline estimate

### MOST ENGAGEMENTS

## NRE + Pilot \$50K – \$150K

Engineering to working  
prototype plus pilot batch.  
Fixed-price.

- ✓ Schematic, PCB, mechanical, firmware architecture
- ✓ 3-5 functional prototypes (EVT / DVT)
- ✓ Tooling, jigs, fixtures
- ✓ 50-500 unit pilot run
- ✓ Full source files delivered

## Production \$15 – \$60 / unit

At 5K volume for typical AI  
wearables. Scales with  
volume and complexity.

- ✓ 1K – 100K+ unit runs
- ✓ Ongoing QC + yield optimization
- ✓ Logistics + fulfillment
- ✓ Global shipping
- ✓ Replenishment planning

Complexity (sensors, radios, battery chemistry, certifications) drives the final number. Try the NRE Simulator at [breezehw.com/tools/nre-simulator](https://breezehw.com/tools/nre-simulator) for a tailored estimate in 60 seconds.

# DFM: Top 10 Pitfalls in AI Hardware

Mistakes we've seen (and fixed) across 50+ hardware projects.

- 1 Thermal runaway**  
AI inference chips generate 2-5W. Without proper thermal paths, throttling kills performance.
- 2 Antenna detuning**  
The human body and enclosure materials shift antenna performance 3-6 dBm. Simulate with real enclosure.
- 3 Battery certification gap**  
UN38.3 + IEC 62133 are mandatory for shipping. Budget 6-8 weeks and \$3-5K.
- 4 Underspec'd power supply**  
Peak current draw during AI inference can be 3x idle. Size your regulator for bursts.
- 5 Acoustic cavity design**  
Mic array performance depends on cavity geometry, not just microphone specs.
- 6 Injection mold draft angles**  
Below 1.5 degrees on textured surfaces = stuck parts and scratched finish.
- 7 Test jig as afterthought**  
Design the test fixture alongside the product. Retrofitting costs 3x and delays 4 weeks.
- 8 Connector placement**  
USB-C orientation and position affect waterproofing, drop strength, and user ergonomics.
- 9 ESD protection gaps**  
Every external port needs TVS diodes. Skipping them passes lab testing but fails in the field.
- 10 Silkscreen and markings**  
FCC ID, CE mark, and recycling symbols need specific sizes and placements per regulation.

# Certification Roadmap

What you need, how long it takes, and what it costs.

Certification	Region	Timeline	Budget	Required For
FCC Part 15	United States	4-6 weeks	\$3-8K	Any radio transmitter (BLE, Wi-Fi)
CE (RED)	European U...	6-8 weeks	\$5-12K	Radio equipment sold in EU/EFTA
UL/IEC 62368	US / Global	8-12 weeks	\$8-15K	Audio/video/IT equipment safety
UN38.3	Global	4-6 weeks	\$3-5K	Any product with lithium battery
IC (ISED)	Canada	4-6 weeks	\$2-4K	Radio devices sold in Canada
SRRC + CCC	China	8-16 weeks	\$5-10K	Radio + safety for China market
MIC (Giteki)	Japan	6-10 weeks	\$4-8K	Radio equipment sold in Japan

## Pro Tip

Start certification pre-compliance testing during the DFM phase.

Finding issues early saves 4-8 weeks and \$5-10K in re-spins.

We include pre-compliance checks in our standard engineering process.

# Free Tools for AI Hardware Founders

No signup required. Start estimating your project now.

## 1 BOM Cost Estimator

Input your specs, get a manufacturing cost ballpark in 60 seconds. Covers SoC, memory, sensors, battery, PCB, enclosure, and assembly.

[breezehw.com/tools/bom-estimator](https://breezehw.com/tools/bom-estimator)

## 2 DFM Checklist

30-point design-for-manufacturability check covering thermal, mechanical, electrical, and certification pitfalls specific to AI hardware.

[breezehw.com/tools/dfm-checklist](https://breezehw.com/tools/dfm-checklist)

## 3 NRE Quote Simulator

Estimate your total development cost: engineering hours, tooling, prototyping, certification, and project management.

[breezehw.com/tools/nre-simulator](https://breezehw.com/tools/nre-simulator)

## 4 Certification Navigator

FCC, CE, UL, SRRC, UN38.3 -- which do you need? Get a timeline, cost estimate, and testing lab recommendations.

[breezehw.com/tools/cert-navigator](https://breezehw.com/tools/cert-navigator)

OPEN SOURCE

**AI Hardware Toolkit**

[github.com/jianjettfu-oss/ai-hardware-toolkit](https://github.com/jianjettfu-oss/ai-hardware-toolkit)

Same BOM data, DFM checklists, NRE guidelines we use every day -- free on GitHub.

# Why Breeze?

Four reasons founders choose us over brokers and trading companies.

## Whole Product, Not Just Parts

We build the full device -- electronics, enclosure, firmware, packaging. One team, one responsibility, one timeline.

## No Equity, No Surprises

NRE + per-unit pricing. Pure service model. We don't take a piece of your company. Period.

## Your IP Stays Yours

NDA + IP assignment is standard on every engagement. You receive full source files, schematics, and manufacturing data.

## AI Hardware Native

We understand edge AI thermal management, antenna design for wearables, battery optimization, and low-power ML inference.

## Breeze vs. the alternatives:

Trading companies add 20-40% margin and zero engineering value.

In-house teams cost \$500K+/year and take 6+ months to hire. We're ready now.

# How we compare

Honest differences, not marketing fluff.

Feature	Breeze	Fictiv / Xometry	HAX / SOSV	Titoma	Trading Co
Scope	Whole product	Parts only	Accelerator	Whole product	Sourcing only
Equity taken	None	None	6-10%	None	None
Minimum order	1,000 units	1 unit (parts)	Varies	~1,000	10,000+
Location	Shenzhen	SF + global	SF + Shenzhen	Taiwan	Shenzhen
AI hardware focus	Yes	No	Some	Generalist	No
Price transparency	Tools upfront	Instant quote	Opaque	Quote-based	Opaque
Language	Native EN + ZH	EN	EN	EN	Broken EN
IP policy	Assignment std	Assignment	Varies	Case-by-case	Often unclear
Open-source toolkit	Yes (4 tools)	No	No	No	No

Breeze is the only whole-product engineering partner in Shenzhen with open-source tools, 1K-unit MOQ, and native bilingual delivery.

# Ready to Start?

1

## Try Our Free Tools

Get a BOM estimate and DFM checklist at [breezehw.com/tools](https://breezehw.com/tools). No signup required.

2

## Book a Scoping Call

30 minutes. Share your concept, we assess feasibility and provide a ballpark cost range.

3

## Receive Your NRE Proposal

Detailed engineering plan with fixed pricing, timeline, and deliverables. No surprises.

4

## Start Building

We assign your dedicated engineering team and begin the 12-week path to prototype.



[hello@breezehw.com](mailto:hello@breezehw.com)

[breezehw.com](https://breezehw.com)  
Shenzhen, China

**Your Engineering Partner for AI Hardware**

NRE + per-unit | No equity | Full IP transfer