

# INFRA SSR MRO

## Preventing Mis-Drills in Aerospace Manufacturing

Disposable Sensor Inlays for Real-Time Prevention



# The \$2–8B Problem

**\$2–8B**

annual losses from mis-drilled fastener holes

9.8 billion holes drilled per year

Mis-drill rate: 0.3–3.7%

**One composite panel scrap: \$500k–\$2M**

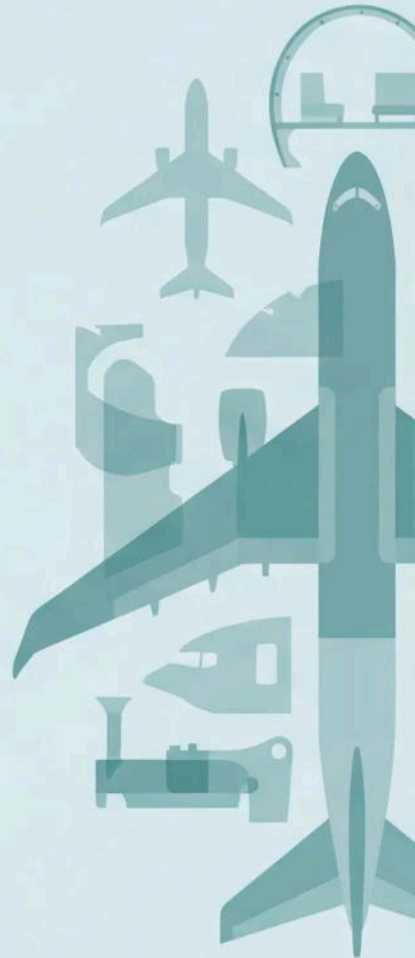
Current methods only detect after damage – none prevent in real time.

## Industry Validation

**Reuters** (Feb 2024): Boeing delayed ~50 737 MAX deliveries after Spirit mis-drilled holes.

**AP News** (Aug 2023): Improperly drilled bulkhead holes slowed production.

**Forbes** (Feb 2024): Employee-flagged defects highlight prevention need.

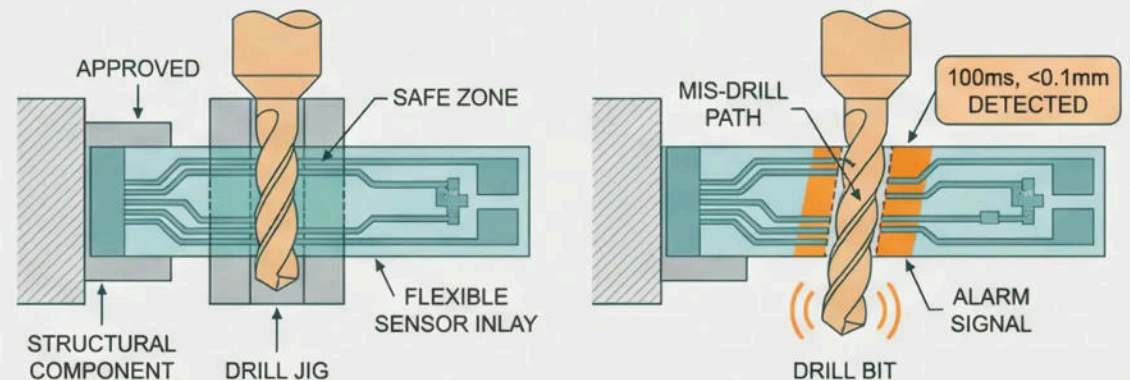


# Our Solution

- Temporary single-layer flexible sensor inlay placed behind the drill jig.
- Drill breach outside allowed window → alarm in **100 ms** + exact location (**<0.1 mm** resolution)
- Inlay removed after drilling → zero FOD, zero weight added to aircraft
- Physics-based deterministic detection – no AI, no cameras, no lighting dependency

## Safe zones pre-mapped on the inlay for each allowed fastener hole.

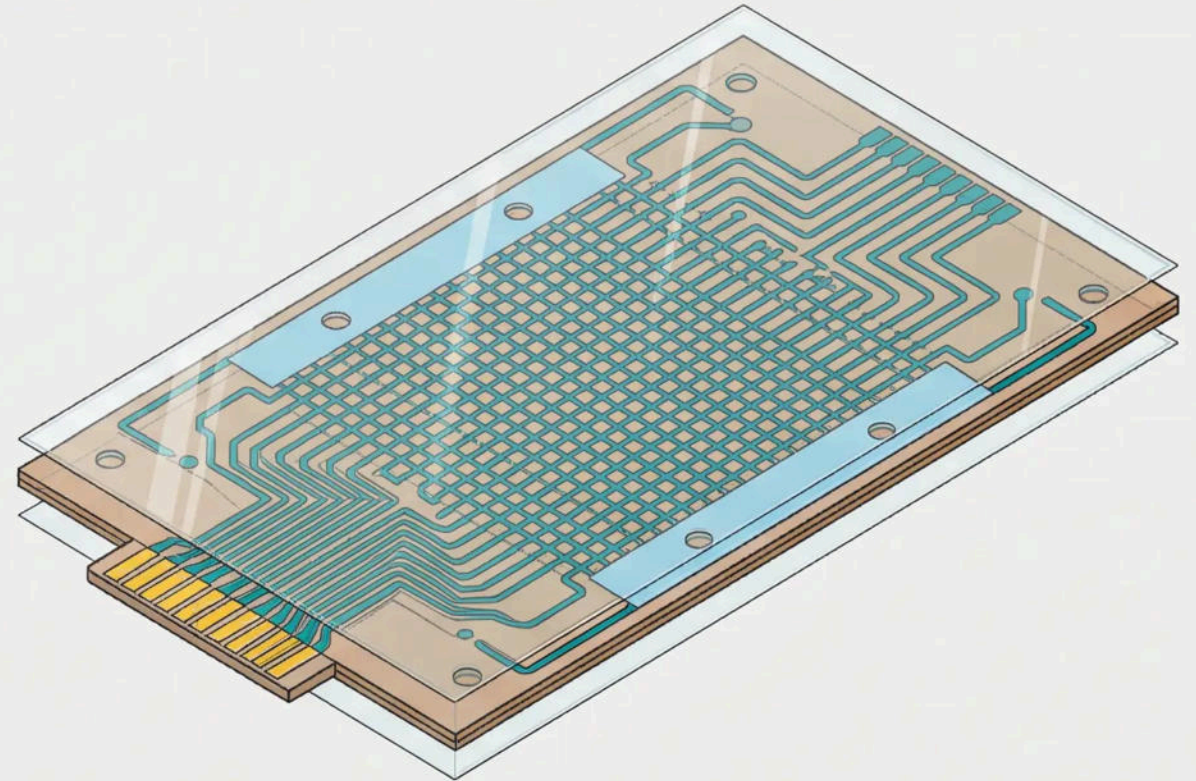
- Correct hole: Breaks only expected traces in safe zone → approved (no alarm)
- Mis-drill / partial / unexpected break: Any deviation → **immediate alarm** (fail-safe)



# Sensor Inlay Build

## Simple single-layer design – low-cost, scalable.

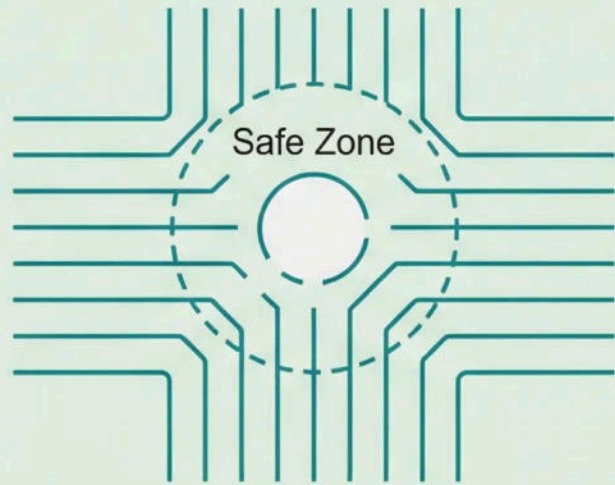
- Thin polyimide film base
- Copper trace grid etched on one side
- Safe zones pre-mapped for expected breaks
- Fiducial markers for alignment
- Edge connector for control box
- Protective overlay



**Standard flex PCB process – high yield**

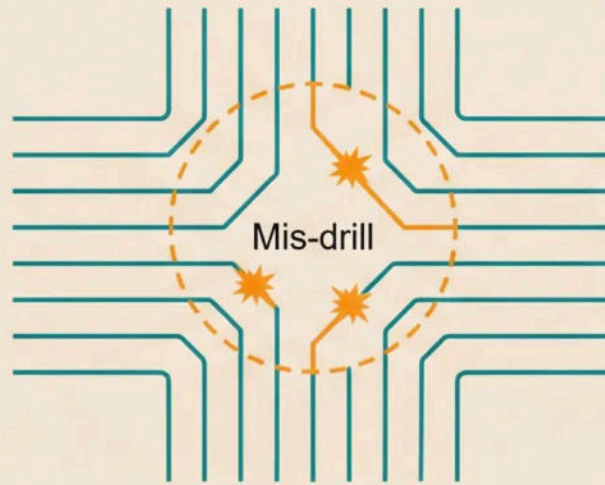
# How Detection Works

Trace grid detects breaches via interruption.



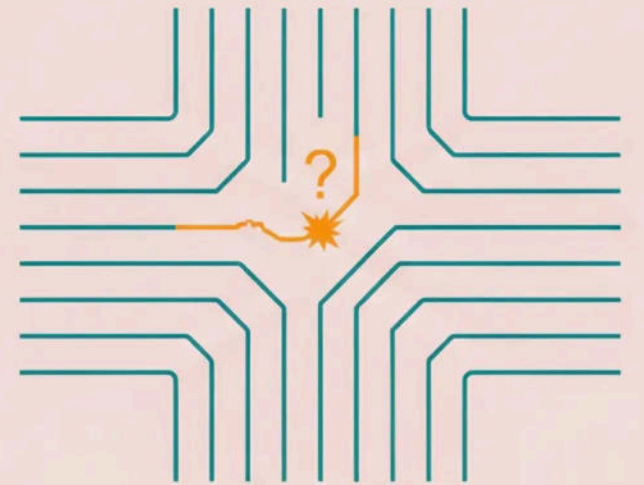
## Correct hole:

Breaks only expected traces  
in safe zone → approved  
(no alarm)



## Mis-drill:

Breaks unexpected traces  
→ alarm in 100 ms + location



## Partial/unexpected break:

Alarm (fail-safe)

*100 ms response time*

# Prototype Proof

Working lab prototype demonstrated (recorded video):

- Test cycles: 1 successful cycle (destructive breach test)
- **Detection rate: 100%** on location breach
- **Response time: Alarm triggered in 100 ms**
- **False positives: Zero**

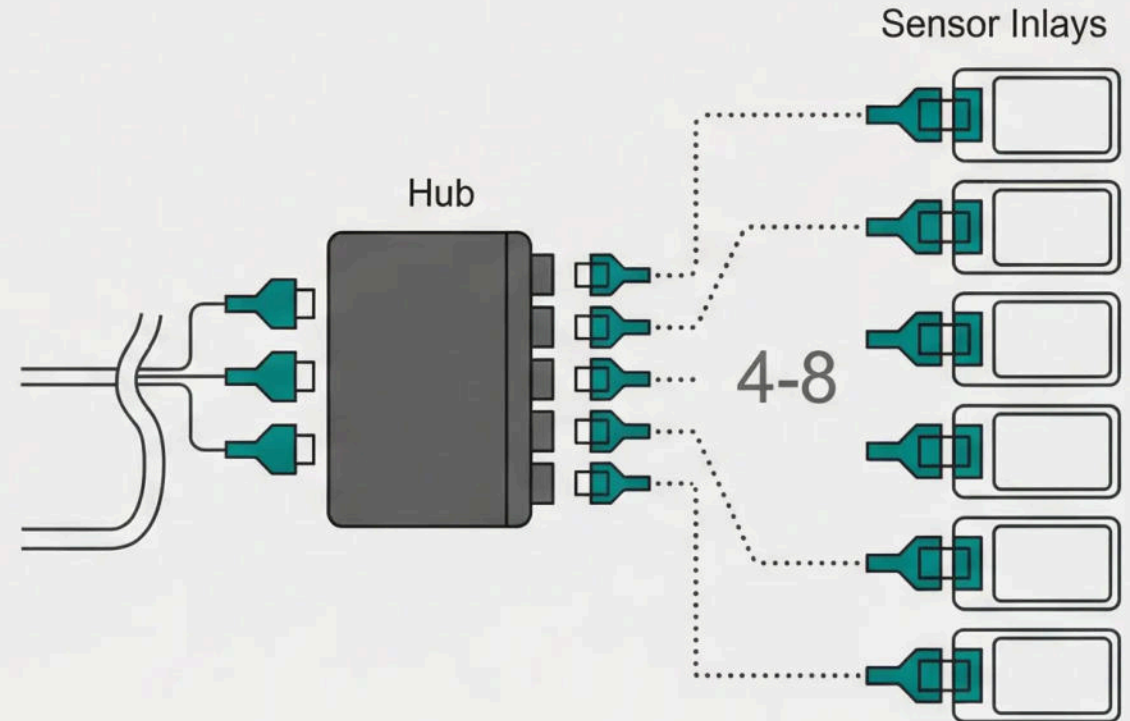
Watch Recorded Demo:

(Refer to video link or embedded player for full demonstration)



# Wiring & Connectivity

- Quick plug/unplug (20–30 sec).
- Single edge connector into station cable
- **Supports 4–8 inlays per station**
- **No permanent wiring**



## Operational Efficiency

Minimal installation time with flexible multi-inlay support

# Control Box

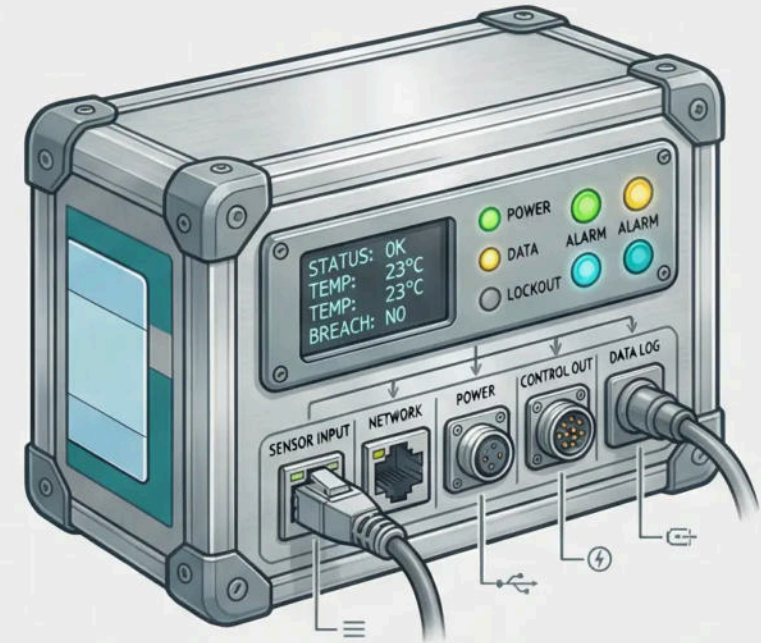
## Rugged monitoring unit

100 ms interrupt on breach → alarm + optional lockout

Logs data

**Cost: \$500 average per station**

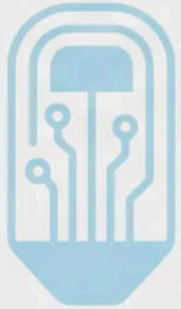
Recurring: \$42/month software



### Key Benefits:

- Real-time monitoring and response
- Data logging for quality control
- Optional drilling lockout for safety

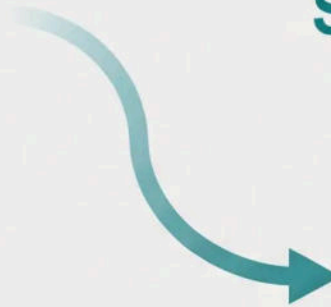
# Licensing & Recurring Revenue



## Hardware Consumable

Hardware consumable +  
software subscription

Serialized activation



## Software Subscription

\$42/month software

Recurring revenue model



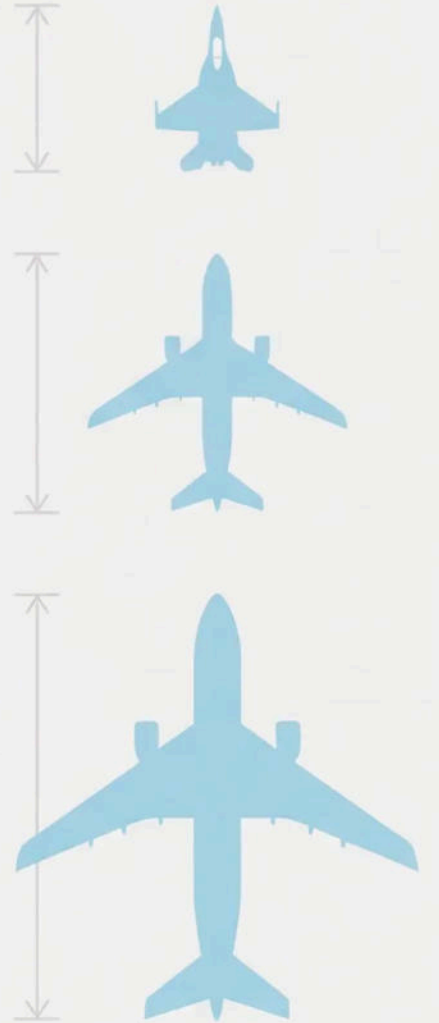
**Blended 80–85%  
margins at scale**

# Product SKUs

SKU	Size (mm)	Coverage (% Holes)	Target Price
Nano	150 × 200	55%	\$15
Small	300 × 400	30%	\$32
Medium	600 × 800	12%	\$75
Large	1000 × 1400	3%	\$145
Extra Big	2000 × 3000	1%	\$395

**Blended ASP: \$45**

**Gross margins: 75%+**



# Competitive Moat

**Only solution that prevents mis-drills in real time.**

Technology	Prevents?	Real-Time?	Composites?	Zero FOD?
Cameras/AI	No	Sometimes	Limited	Yes
Laser/NDT	No	No	Yes	Yes
<b>Infra SSR</b>	<b>Yes</b>	<b>100 ms</b>	<b>Yes</b>	<b>Yes</b>

Unique competitive moat:  
Real-time prevention capability

# Customer ROI



Tier-1 (650 shipsets/yr): \$7.6M annual loss →  
\$950k–\$1.1M cost → 6–10 week payback.

# Certification & Qualification Path

## Designed as tooling — not a flight-certified aircraft part

- Temporary manufacturing inlay
- Installed behind the drill jig and removed immediately after drilling
  - No aircraft installation, no added weight, zero FOD
- Internal manufacturing trials
- Production-line **approval** by OEM / Tier-1 quality teams

## Tool qualification, not FAA/EASA certification

- Falls under **shop-floor tooling validation**, not airworthiness approval
- Similar qualification path to drill jigs, fixtures, torque tools

## OEM-led validation process

- Internal manufacturing trials
- Repeatability & false-positive verification
- Production-line approval by OEM / Tier-1 quality teams

## Fail-safe by design

- Any unexpected breach → immediate alarm
- Deterministic physics-based detection (no AI tuning risk)

## Low regulatory friction = fast adoption

- Enables rapid deployment without aircraft recertification cycles

## Result:

- **Aerospace-grade prevention with minimal regulatory overhead and fast time-to-revenue**

# Market Opportunity

**Beachhead SOM:**

**\$128M**

hardware + software



**Total Market:**

**\$160–200M**

**Target: 20% Market Share**

**\$32–40M ARR by 2032**

**\$320–500M**

**valuation**

(10–12× revenue multiple)

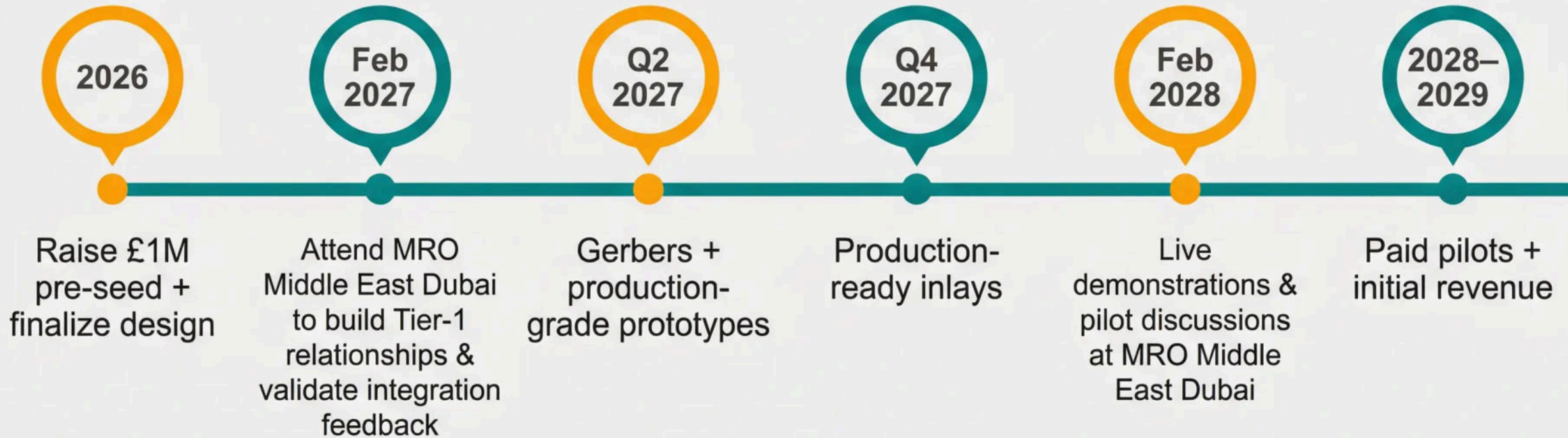
Beachhead SOM

Total Market

Valuation



# Timeline & Milestones



# Current Status & Team

## Status:

- Working lab prototype demonstrated (recorded video available)
- 1 test cycle with 100% location detection (100 ms response time)
- Patent application in preparation – filing targeted Q2 2027
- No customer contracts yet
- Seeking aerospace advisor post-raise

## Team:

### Shahid Hussain – Founder & Inventor

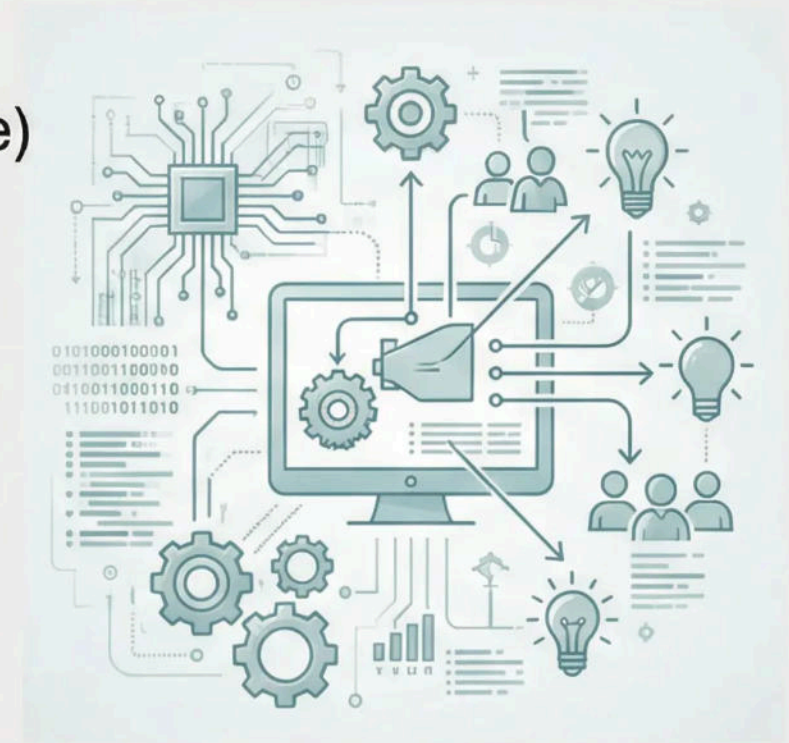
Full-time committed; developed prototype and technical concepts

## Contact:

shahid.hussain@infrassrmro.com

+44 75998 50171

LinkedIn profile available

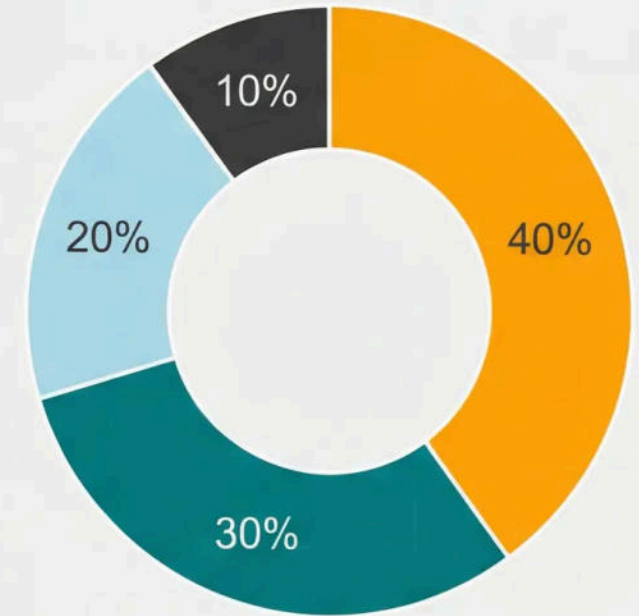


# \$1M Pre-Seed Ask

## £1M Pre-Seed Funding

24-month runway allocation:

- 40% → Gerber package, fabrication, testing
- 30% → Travel/trade shows (Dubai Feb 2028), marketing
- 20% → Founder salary & living expenses
- 10% → Part-time aerospace advisor + patent attorney



### Milestones:

Production-ready inlays Q4 2027 for Dubai supplier demos

# Exit Strategy

## Comparable Exits & Valuations

- Electroimpact (aerospace tooling automation) – valued >\$500M (private)
- True Position Robotics (precision drilling systems) – acquired ~\$400M range
- Kuka Aerospace (robotics/tooling) – acquired by Midea for \$5B+ (broader)
- Spirit AeroSystems tooling partners – multiple \$100M–\$1B+ transactions

## Our Path

- 20% market share of \$160–200M SOM → \$32–40M ARR by 2032
- 10–12× revenue multiple (conservative for hardware + recurring)
- **\$320–500M exit valuation**

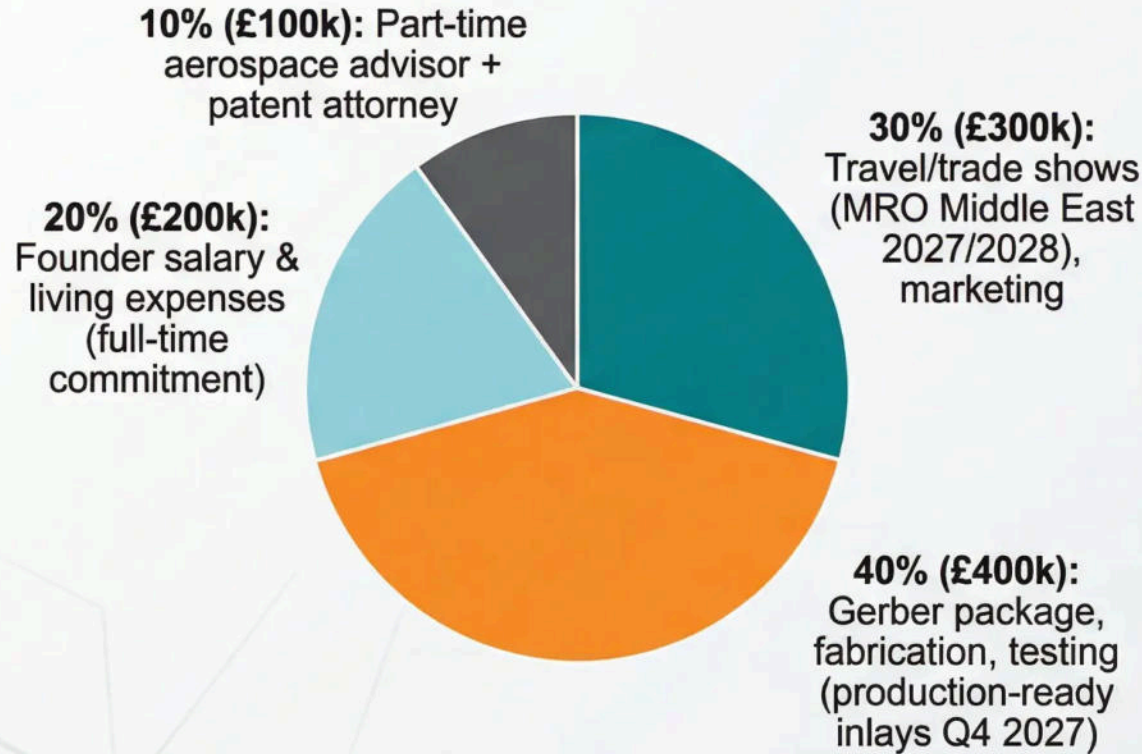
## Likely acquirers:

Boeing, Airbus, Spirit, GKN, Premium Aerotec, or tooling giants (Electroimpact, Kuka)



# Financial Projections & Use of Funds (Appendix)

## Use of £1M Funds (24-Month Runway)

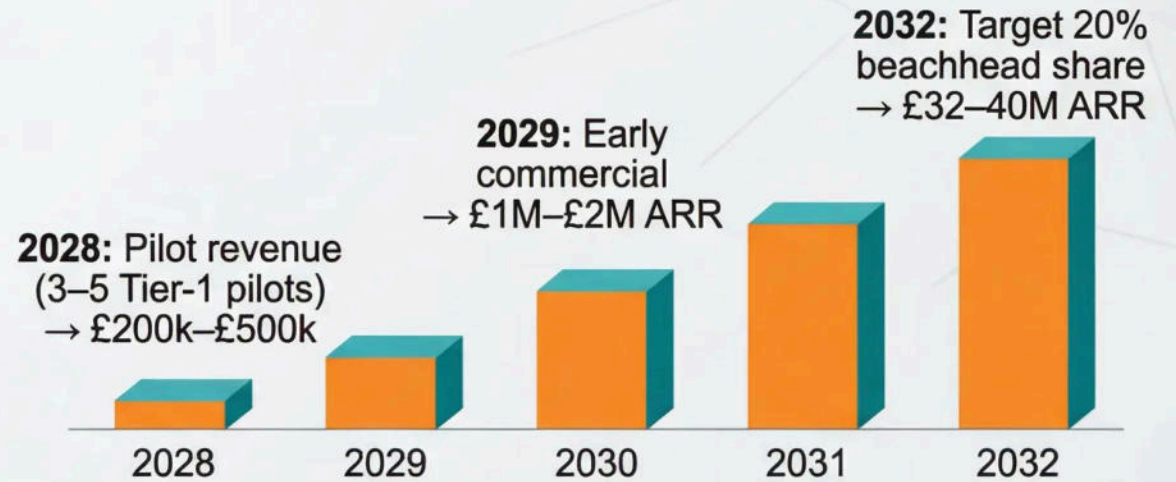


**Monthly Burn Rate:** ~£41,667 | **Runway:** 24 months

### Notes:

Conservative estimates based on £128M beachhead SOM. No revenue assumed pre-2028. Exit comparables: Electroimpact (>£500M), True Position Robotics (~£400M).

## Revenue Ramp Projection (Conservative)



## Key Milestones & Valuation Path

