

MARASA

[Neuromorphic compute for the space industrial age]

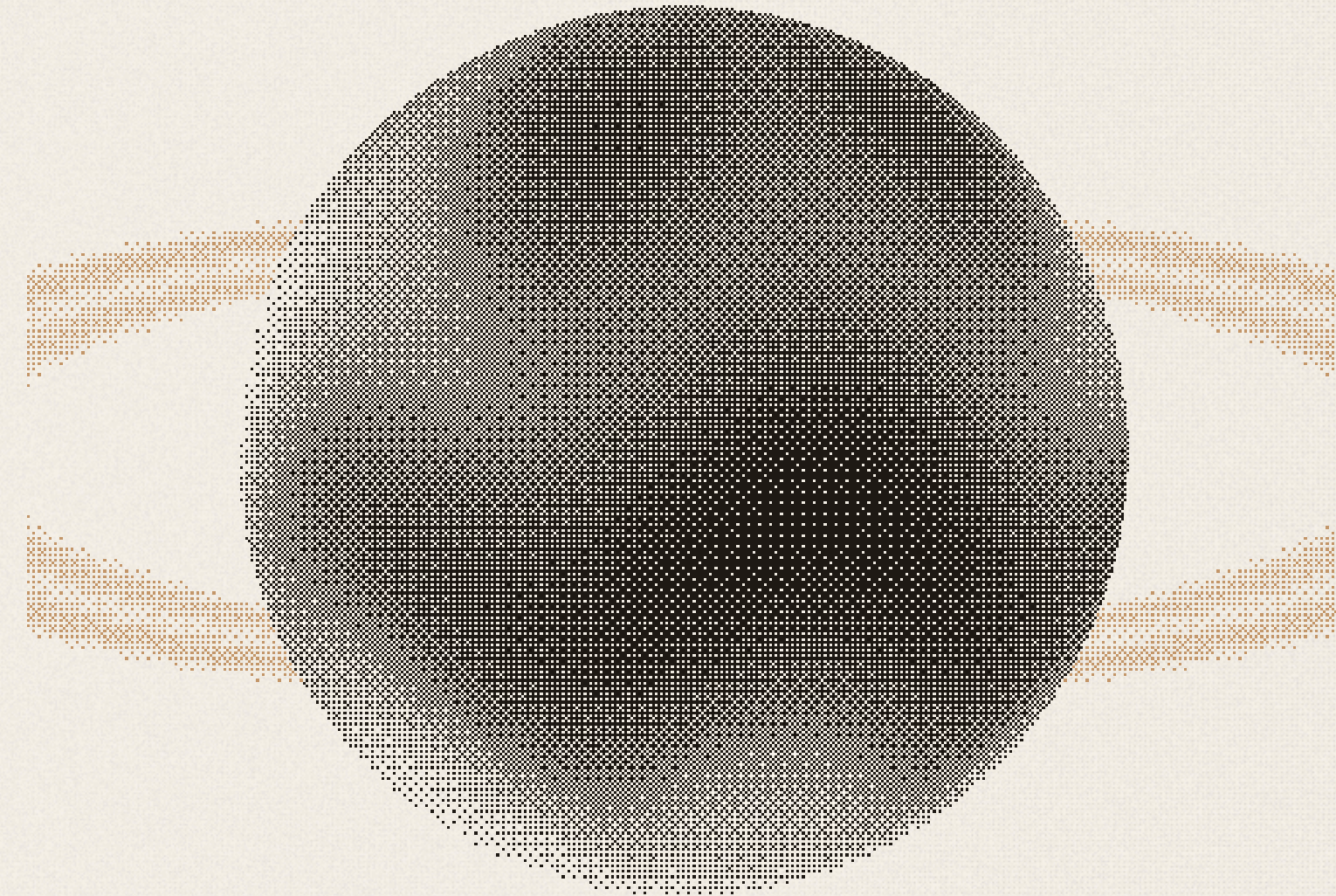
Radiation-hardened computing modules for the autonomous space economy.

Analog + digital, software-defined, in-orbit reconfigurable.

PRE-SEED INVESTOR DECK / MAY 2026

Santa Fe, New Mexico
[CONFIDENTIAL]

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The compute stack for space is **structurally broken. We close the gap.**

MARASA builds radiation-hardened modules that combine a field-programmable analog array with rad-tolerant FPGA fabric running neuromorphic inference — both halves reconfigurable in orbit. **Nothing else on the market does this.**

An internal design pipeline — production rules, formal constraint solving, physics-informed optimization — turns months of incumbent custom engineering into weeks of configuration on a common platform. The pipeline is the compounding moat. Every mission shipped widens it.

Entry market: cubesats and smallsats running real defense and commercial missions.

Roadmap extends to U.S. trusted-foundry ASICs and self-healing compute architectures.

\$1.5M

PRE-SEED RAISE · \$9M POST-MONEY

60–75%

MISSION-LINE TARGET GROSS MARGIN

\$3–4.5B

PHASE 1 COMPUTE TAM BY 2030

\$20B+

CUMULATIVE ACROSS ALL PHASES

[THE STRUCTURAL GAP IS THE OPPORTUNITY]

A compute stack stuck in the 1990s.

Mission architects face two bad options. Neither works at constellation scale.

OPTION A

Custom rad-hard silicon

BAE RAD750 — released 2001. Still the workhorse, on 100+ flights.

5–10 year development cycles.

\$100K–\$500K per unit.

Frozen architectures, already a generation behind on arrival.

OPTION B

Unmitigated commercial chips

Modern compute capability — at terrestrial economics.

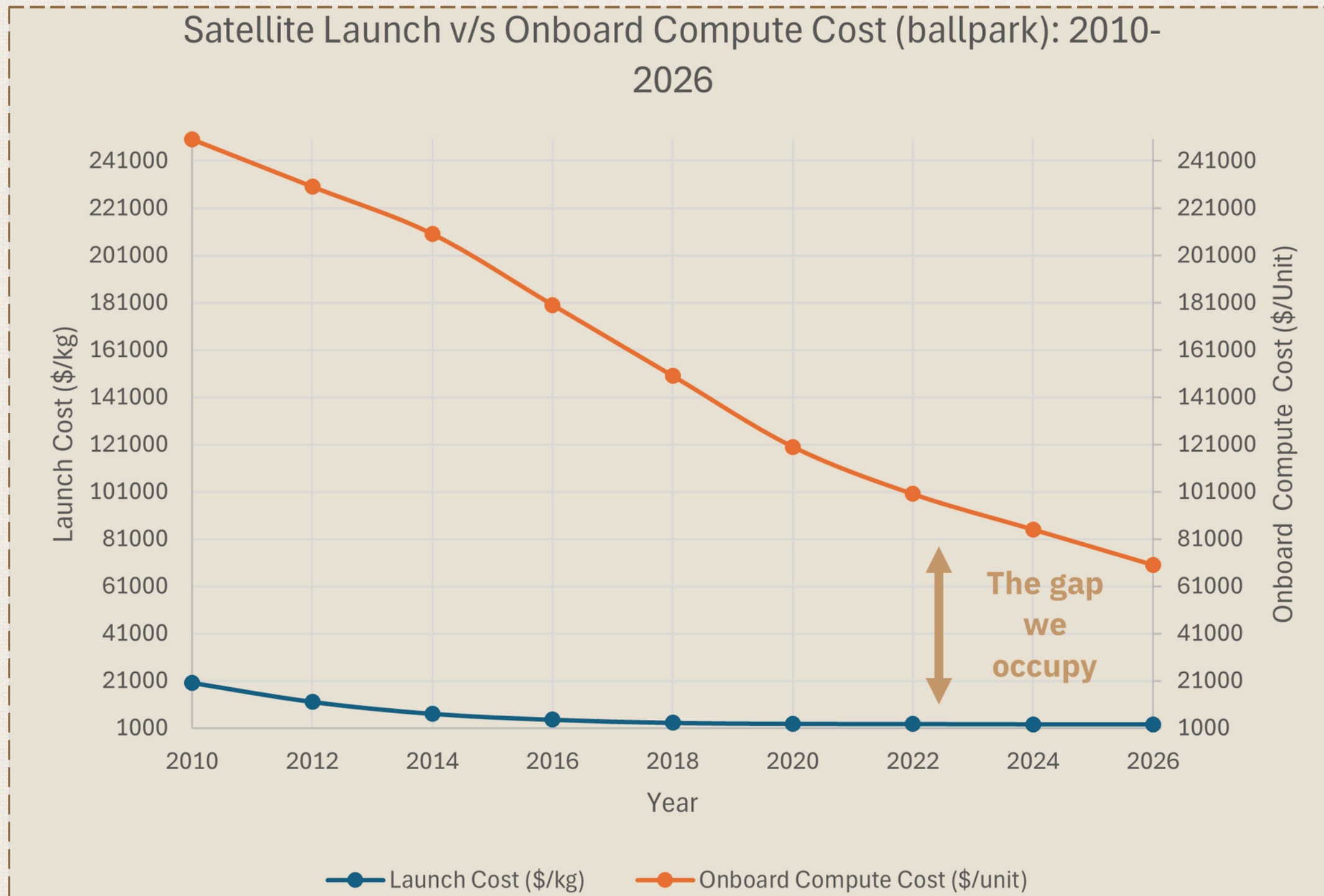
Ad-hoc radiation mitigation only.

Unquantified reliability risk in orbit.

Mission failures are the failure mode.

[THE THIRD OPTION] Rad-tolerant compute with modern capability on cubesat timelines and budgets.
That is what MARASA builds.

Launch costs collapsed. Compute costs didn't.



[THE INVERSION]

20x

LAUNCH COST REDUCTION (2010 → 2026)

≈ 0x

RAD-HARD COMPUTE RELATIVE COST REDUCTION

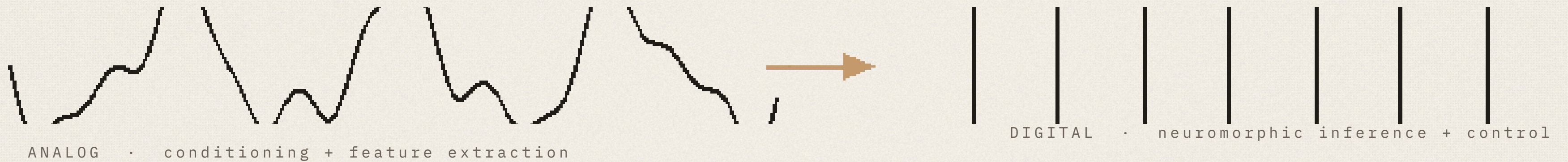
\$50K-100K

3U CUBESAT RIDESHARE COST

"Why the economics of orbital AI are so brutal" - TechCrunch

One platform. Two product lines.

Field-programmable analog array + rad-tolerant FPGA — both reconfigurable in orbit.



[DEVELOPER LINE] · MARKET CREATION

Developer-Accessible Module

Boots Linux. Standard interfaces. Works for a graduate student without specialized training.

Seeds the installed base inside university cubesat labs and defense research groups.

\$7.5K - \$15K · 50-65% TARGET GROSS MARGIN

[MISSION LINE] · REVENUE

Mission-Specific Module

Same platform. Variant population matched to a specific mission's radiation environment, power budget, and interfaces.

What incumbents take 6-12 months to engineer, our pipeline configures in weeks.

\$30K - \$100K+ · 60-75% TARGET GROSS MARGIN

A real market – sized conservatively.

Phase 1 TAM only. Sized to the compute portion specifically. Excludes medium/large satellites (\$36B market by 2030), military edge computing (\$10B by 2034), and underwater autonomous systems (\$8.7B by 2030), all accessible as we build pedigree.

[TAM]

\$3–4.5B

BY 2030

Satellite onboard computing + adjacent edge/AI compute, plus mission-specific rad-hard pulled into the cubesat band.

[SAM]

\$200–500M

ANNUAL · 2030

Defense smallsats, EO/ISR & comms constellations, cislunar, plus seeded research line.

[SOM]

\$40–80M

YEAR 5 · BASE CASE

Mission-line revenue at base trajectory; aggressive case reaches \$80–150M with constellation design wins.

Radhard supply CAGR at 4-6% vs Satellite demand CAGR 15-28% → The widening gap is our wedge

Three forces converge for the first time.

Demand is rising. Workarounds are closing. Capital is flowing. This combination has not existed before.

[01] DEMAND

Proliferated constellations need compute.

+58K

NEW SATELLITES BY 2030 (GAO)

10,400+ active satellites today, 93% in LEO. Every one needs onboard compute, often multiple nodes per platform.

[02] SUPPLY

The rad-hard gap is widening.

3-5x

DEMAND-VS-SUPPLY GROWTH MISMATCH

Rad-hard electronics CAGR 4-6%. Satellite market CAGR 15-28%. Incumbents cannot close the gap on their cycle times.

[03] CAPITAL

Defense budgets are growing.

\$71B

U.S. SPACE FORCE FY27 REQUEST

PWSA at ~\$5B/yr through FY29. CHIPS Act expanding trusted foundries. SBIR/STTR budgets up across AFRL, NASA, NRO, DIU.

"Space Force plans to invest billions in sprawling Space Data Network in FY27" - DefenseNews

The intersection is empty.

Nobody is doing FPGA + FPAA analog-digital co-design for space compute.

↑ AI / NEUROMORPHIC

BAE · Frontgrade

Custom rad-hard, digital only

MARASA

FPAA + FPGA · neuromorphic · pipeline-driven · rad-tolerant

Microchip · Xilinx

Rad-tolerant FPGAs, digital only

Unibap · Ubotica · KP Labs

AI payload processors, COTS digital

ANALOG + DIGITAL CO-DESIGN →

TRADITIONAL RAD-HARD · BAE · Frontgrade

5-10 yr cycles. \$10K-\$500K+. No analog. No neuromorphic.

SPACE EDGE COMPUTE · Unibap · Ubotica · KP Labs

Good products, all-digital COTS. No analog front end. Power-hungry per FLOP.

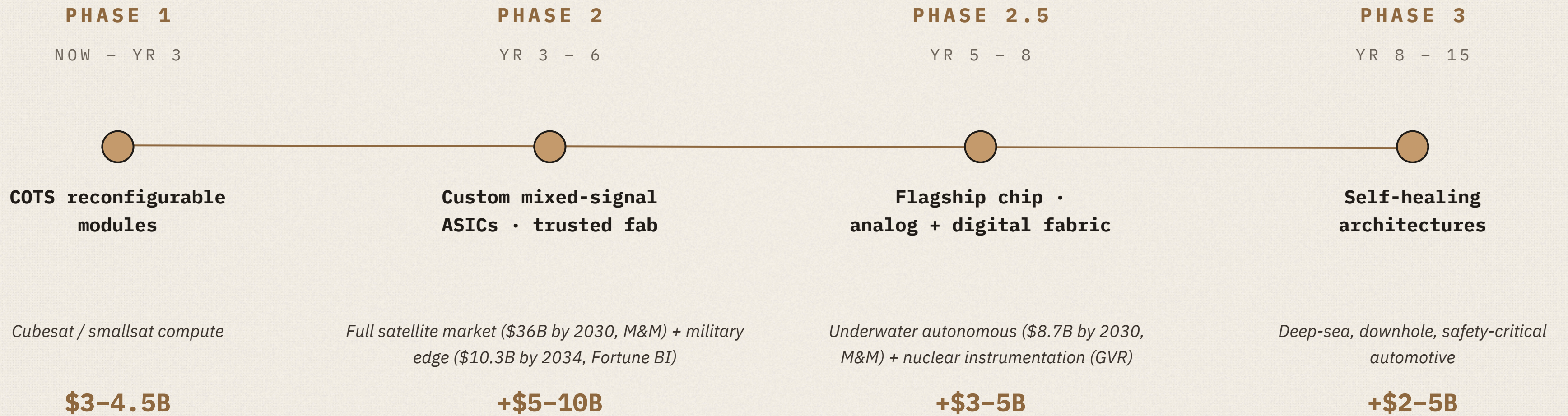
FPAA VENDORS · Okika / Anadigm

Excellent commercial FPAAs. Not pursuing space. Potential partner today, competitor later.

[MARASA] The only player at the intersection where the physics of spacecraft sensing actually lives.

A 15-year arc. Pipeline as the through-line.

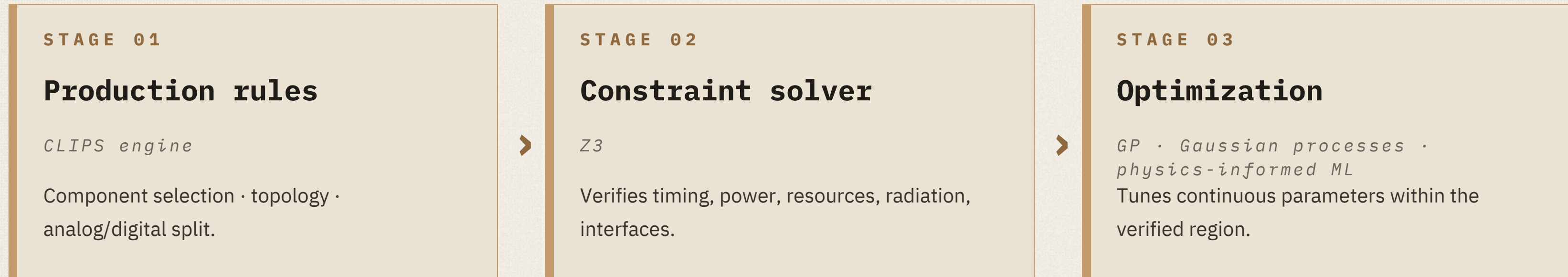
Each phase compounds the last and run partially in parallel. TAM expands at every step.



[CUMULATIVE TAM AT PHASE 3 MATURITY] **\$20B+** · Near-term revenue validates the pipeline. Long-term trajectory creates the category.

The design pipeline is what we actually own.

It occupies the role internal tooling plays at SpaceX, Anduril, Hadrian: The proprietary method that makes the product possible at this speed and cost.



MISSION SPEC IN → VERIFIED, OPTIMIZED MODULE CONFIGURATION OUT · WEEKS, NOT YEARS.

[COMPOUNDING]

Every mission shipped adds validated knowledge to the rule base. A competitor starting today faces a structural deficit that grows with time.

Hardware margins. Software-company moat.

Directional, not financial-model-grade. The margin structure is what to underwrite at this stage.

PRODUCT LINE	UNIT BOM	UNIT PRICE	TARGET GROSS MARGIN
Developer Line	\$3.3K – \$9.25K	\$7.5K – \$15K	50 – 65 %
Mission Line	\$8K – \$25K	\$30K – \$100K+	60 – 75 %

[REVENUE TRAJECTORY]

YR 1 30–80 dev units · first SBIR-funded mission contracts. **\$300K–\$700K**

YR 2–3 150–400 dev units · first mission-line flight · first commercial design wins. **\$5M–\$20M**

YR 4–5 1,000+ dev units · multiple constellation programs · Phase 2 ASIC tapeouts in flight. **\$30M–\$100M+**

SBIR-led derisking. Then primes. Then direct.

Non-dilutive funding builds heritage and program-office relationships before commercial sell-through.

[PHASE 1]

SBIR-led customer development

AFRL · SDA · NRO · NASA · SpaceWERX · DARPA · DIU

Funds technical derisking, builds program-office relationships, preserves equity.

[PHASE 2]

Prime contractor partnerships

Northrop · Lockheed · L3Harris · Ball · York · Terran · Rocket Lab

12–18 month relationship cycles. Entry as payload / avionics subsystem supplier.

[PHASE 3]

Direct commercial sales

Planet · Maxar · Iceye · Satellogic · HawkEye · BlackSky · Spire

Constellation operators, lunar service providers, integrators. First commercial revenue YR 2–3.

[DEVELOPER-LINE SEEDING PROGRAM] · THE INSTALLED-BASE FLYWHEEL

60–75 free units to relevant cubesat labs and neuromorphic groups across U.S. and Canada. Total cost **\$390K–\$500K** · **\$6.7K–\$8.3K** per relationship · 10% conversion → **\$180K–\$640K** pull-through per converted lab.

A fully technical founding team.

Active Q clearances. Direct experience with the Department of War Trusted Microelectronics ecosystem and Los Alamos research.



RAYNI JULES

CEO / CTO - Co-founder

Q-cleared, LANL · Intelligence & Space Research.

Former RadHard by Design lead, Department of War Trusted and Assured Microelectronics. Vanderbilt EE · PhD student CS, evolutionary computation + FPGAs.



DR. DEBARATI DAS

COO - Co-founder

Postdoc, U. of Winnipeg · MAPPER CubeSat deputy SciPI.

NASA Mars Science Lab ChemCam Science Payload Uplink Lead at LANL. National Geographic Explorer. PhD McGill.



CLAIRE RECAMIER

CHIEF SCIENTIST - Co-founder

Q-cleared, LANL · Weapon Physics, safety & surety.

Computational physics. Yale BS Physics. PhD student, Northwestern Applied Physics.



FRANCES GARCIA

CHIEF ENGINEER

Secret-cleared, NSWC Crane · Strategic Microelectronics.

Former rad-modeling lead. Govt / nuclear-effects expertise. UT Knoxville BS Phys / MS EE.



DR. DORIANIS PEREZ

COMP. SCIENTIST

Q-cleared, LANL · Verification&Validation for re-entry vehicles.

AI Engineer, AI 4 Nuclear Deterrence. PhD Comp Sci, FSU. C++/HLS lead.



THALIA WRIGHT

LEAD SOFTWARE ENG.

LANL · Intelligence & Space Research, software & data systems.

Networking, cryptography, OS, languages. Owns dev-line APIs + pipeline integration.

\$1.5M • PRE-SEED

\$9M POST-MONEY • ~16% DILUTION • SAFE OR PRICED – LEAD'S CHOICE

[USE OF FUNDS]

- Pipeline demo on real hardware (iCEBreaker FPGA + Okika FPAA)
- First production run of dev-line boards + 60–75 unit seeding program (~\$500K)
- SBIR proposal development across AFRL · SpaceWERX · NASA · DIU
- 14–18 months team runway · long-lead component procurement
- SmallSat Conference + DoW industry days · technical visibility

[MILESTONES THIS CAPITAL REACHES]

- Pipeline demo on real hardware with rule-based backtracking visible
- Dev-line boards in 40+ university cubesat / defense research groups
- At least 2 SBIR Phase I awards in pipeline or awarded
- First mission-specific customer engagement underway
- Talks / publications at NSREC and IEEE Aerospace
- Seed position: flight heritage + materializing prime partnership

Ideal lead: deep-tech or defense-focused fund with space/semiconductor portfolio companies and program office relationships

Pipeline Demo

