SOLAR COMPUTE SAIL
PROJECT VELA

Project Vela — Investor overview

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Infrastructure for executing existing AI models

> We measure success by how efficiently we execute existing AI models and deliver their output. We are developing the infrastructure, while model creators and users determine what that output accomplishes. Vela's distributed architecture is designed to maximize token throughput per unit of sunlight, launched mass, and deployed cost.

Project Vela is an early-stage engineering initiative developing a novel distributed compute architecture. Its orbital design integrates inference compute with solar power and passive heat rejection. We are not developing AI models, applications or use cases. Supported model configurations remain under validation. No production or orbital compute service is offered today.

Evidence, calculations and targets

Measured: layer throughput, complete-model accuracy through 7B in a hybrid accelerator-and-host system, and sampled layers of a 72B-class model on development hardware. These results do not establish whole-model throughput, complete-system energy or orbital performance.

Calculated: V1 per-watt performance is calculated from measured chip throughput; whole-system measurement is under way. An approximately billion-token-per-second per-launch projection applies energy per operation measured on an image model to a 7–8B-class language-model workload. It is not measured language-model throughput or delivered launch capacity. Input-processing panel scenarios (about 105,000 tokens/s at 3B class, 46,000 at 7–8B, per ~3.8 kW nameplate panel) are calculated from measured layer throughput, with unverified power, controller and batching assumptions; they are not measured end-to-end serving rates. V1's "roughly on par with an H100 per watt" is a provisional calculation on the original v1.3 basis, not a measured head-to-head.

Design targets: V2 and V3 efficiency gains, including approximately 5 billion tokens per second processed from one 100-tonne Starship launch on the stated 7–8B-class model assumptions, in sunlight (input and output combined under an input-heavy reference scenario, not split-independent). The purpose-built full-scale system has not been built or flown. Token performance depends on model, context, precision, utilization and the balance of input processing and output generation. Throughput per launched mass and deployed cost are design objectives, not measured economics.

Performance evaluation distinguishes chip, module and complete-system boundaries. The public solar-power comparison means tokens per second per watt of electrical power delivered by the solar cells—not incident sunlight. Fidelity is checked against a stated model baseline; latency should be reported only when measured.

Opportunity and next validation steps

The opportunity is applicable inference compute capacity for existing-model workloads—not total AI value, agent software value or all cloud spending. Commercial applicability depends on compatibility, utilization, communications constraints, customer economics and adoption. No numerical market-size estimate or revenue forecast is presented.

Planned validation includes whole-system power measurement, larger-model fidelity and throughput, panel-scale thermal/environmental validation and communications. Vela-Scout 83 is a proposed rideshare demonstrator; no flight is committed. These are validation objectives, not a delivery schedule.

Execution risks

Key uncertainties include model fidelity and utilization, complete-system energy use, panel manufacturing yield, thermal and orbital durability, launch/payload assumptions, communications and ground links, and customer adoption. Published design calculations are not demonstrated capacity.

Project and contact

Project Vela is a product of Alien Alliances, Inc., based in Orem, Utah, and is led by its co-founders: Jason Crawford, Founder & CEO, and Jennifer Sharp, Co-Founder, CFO & Head of Quality.

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