VICTUS

PhantomNAV™

Synthetic GPS for Contested Autonomy

PhantomNAV™ is our patent-pending Machine Learning State Estimator (MLSE) for Contested Autonomy in GPS-denied environments. A sim-to-real machine-learning pipeline trains domain-specific inertial navigation models in high-fidelity simulation, then deploys lightweight inference packages to commodity edge compute. Models broadcast position corrections to the autopilot over MAVLink or other protocol. Single platform across air and maritime today, with subsea, ground, and orbit on the roadmap. Vendor-agnostic. No GNSS reliance at runtime.

01 CORE CAPABILITIES

Sim-To-Real

VICTUS PhantomNOISE bridges simulation and hardware noise profiles. Models trained in sim transfer cleanly to live platforms.

Multi-Domain

Single platform spans air and marine. Pluggable architecture extends to subsea and ground (roadmap).

Edge-Deployed

ONNX inference on commodity ARM compute. Real-time at 10–50+ Hz with sub-100 ms latency.

Autopilot-Native

MAVLink position-correction broadcast. ArduPilot primary, PX4 supported. Open Architecture & vendor-agnostic.

02 INTEGRATION FLOW

STEP 01

Configure

Ontology-driven mission and scenario configuration on enterprise data platform.

STEP 02

Simulate

PhantomSIM runs high-fidelity, multi-domain simulation across air and marine.

STEP 03

Train

PhantomNOISE applies real hardware noise profiles to sim data; temporal ML model trains.

STEP 04

Deploy

ONNX inference package pushed to edge compute (Pi 4/5, Jetson Orin, VOXL, etc).

STEP 05

Navigate

Real-time position corrections broadcast to autopilot via MAVLink. No GNSS required.

HOST PLATFORM REQUIREMENTS

COMPUTE	Pi 4 (8 GB) min | Pi 5 / Jetson Orin / VOXL
CPU	ARM Cortex-A72 quad-core @ 1.5 GHz
SENSING	Triple-redundant IMU (e.g., Cube Orange)
INFERENCE	10–50+ Hz, < 100 ms latency
AUTOPILOT	ArduPilot (primary) | PX4 (supported) | OSA / MOSA
INTERFACE	MAVLink position correction broadcast | OSA / MOSA
DOMAINS	Air | Maritime | Subsea | Ground | Orbit

PLATFORM APPLICABILITY

AIR CURRENT

MARITIME CURRENT

SUBSEA ROADMAP

GROUND ROADMAP

ORBIT ROADMAP

Single ML pipeline — pluggable simulator architecture extends to additional platforms without re-architecting the data or training stack.

NEXT STEP: SCHEDULE A CAPABILITY BRIEF

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