Mission OS Sprint Zero Report

Acceptance Demonstration · Simulation Environment

Black Widow Aerospace · BIG TRADE Inc. · Ontario, Canada

SPRINT ZERO · PASS

V1 · June 2026

Executive Summary

Mission OS completed Sprint Zero acceptance testing in a simulated environment. The program demonstrated end-to-end execution of a distributed multi-agent mission profile: mission planning, orchestrated execution, telemetry ingestion, automated reporting, and mission replay. All Sprint Zero gates passed. Mission outcome: COMPLETED.

Mission Objective

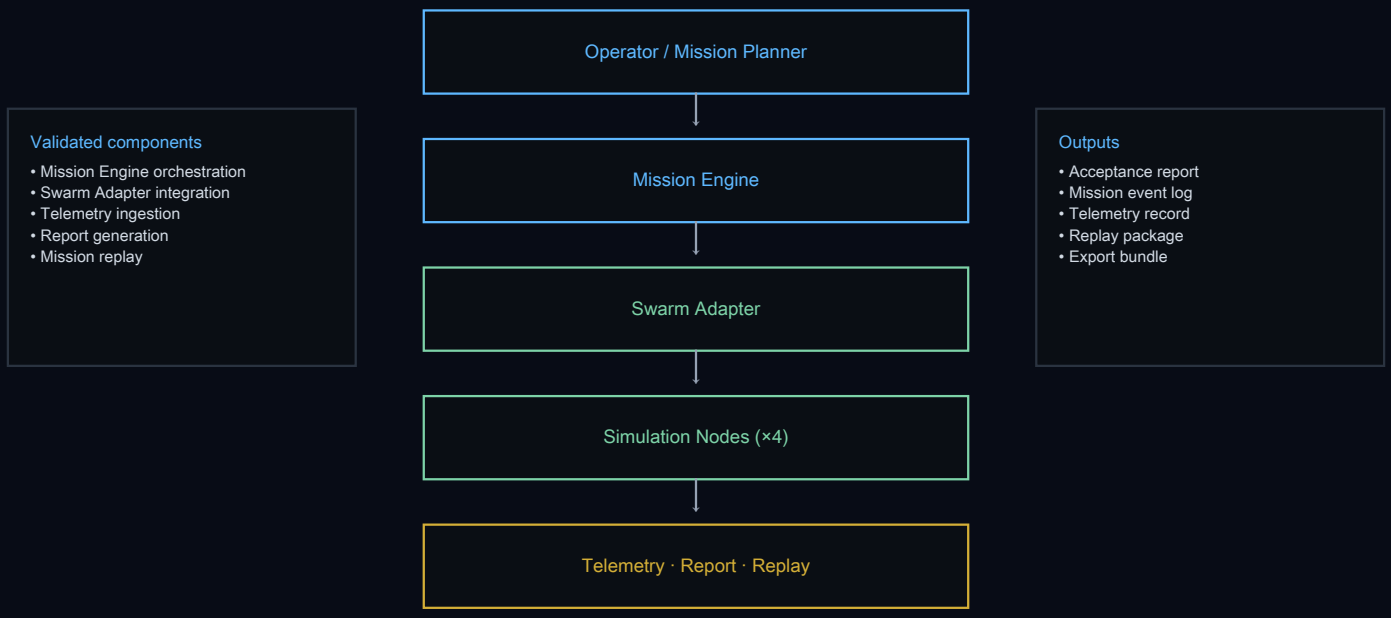
Validate the Mission OS research platform as a decision-support layer for distributed UAV mission profiles. Sprint Zero focused on orchestration integrity, read-only integration with existing simulation assets, scenario execution, and auditable mission reconstruction — without modifying external simulation systems.

Current Status

Sprint Zero is complete. Mission OS remains a research and development platform at TRL 4. Demonstrations were performed in simulation. Results support continued development toward V1.1.

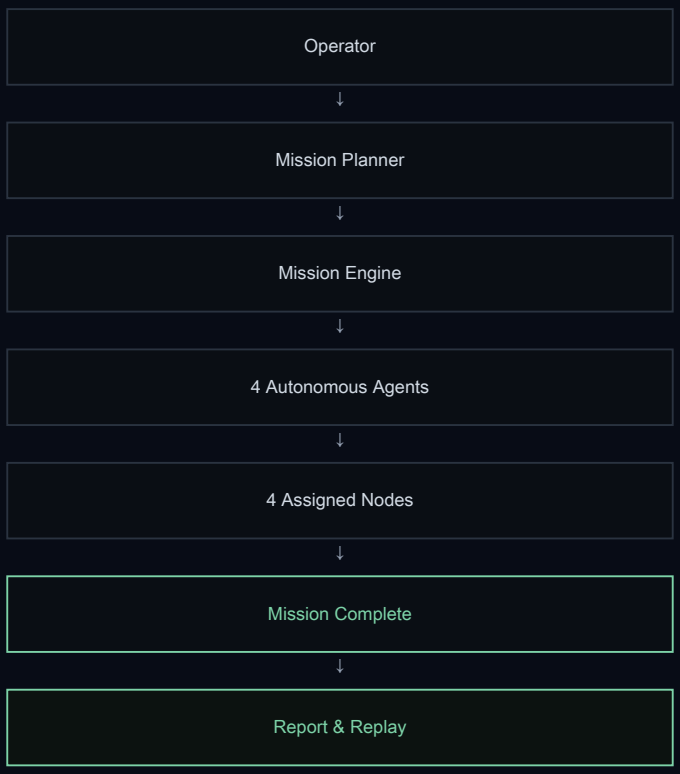
4	42	4/4	PASS
Target Nodes	Mission Events	Node Completion	Acceptance

Mission OS layers separate mission design, orchestration, external simulation integration, telemetry and reporting, and replay. The platform validates missions; it does not control real aircraft.



Reference profile: Kyiv-area distributed mission (carrier + four sub-system nodes). Phases included pre-mission planning, coordinated transit, multi-node task assignment, survey completion, and recovery assessment. Scenario executed entirely in simulation. Survey objectives completed (48/48 photo waypoints). Four sub-system nodes recovered. GO/NO-GO advisory outcome: GO (simulation only).

Mission Flow



Week 1	Sprint kickoff · mission profile defined	DONE
Week 1–2	Mission Engine Gate	PASS
Week 2	Swarm Adapter Gate	PASS
Week 2–3	Kyiv Scenario Gate	PASS
Week 3	Replay Gate	PASS
Week 3	S01 Acceptance Gate	PASS
Week 3	Sprint Zero Sign-off	PASS

Six acceptance gates were evaluated. All gates passed. Summary metrics below.

Mission Engine Gate
PASS
State-machine orchestration engine validated across full mission lifecycle.

Swarm Adapter Gate
PASS
Integration layer validated without modification of external simulation systems.

Kyiv Scenario Gate
PASS
Distributed four-node mission profile completed in simulation.

Replay Gate
PASS
Mission reconstruction generated from mission events and telemetry records.

S01 Acceptance Gate
PASS
End-to-end acceptance criteria met: plan → execute → report → replay.

Sprint Zero Sign-off
PASS
Checklist complete. Sprint Zero closed.

Status	Mission Outcome	Node Completion	Replay
PASS	COMPLETED	4/4	Available

Report	Export
Available	Available

Mission Engine
Orchestration state machine executed mission phases with deterministic transitions.

Swarm Adapter
Read-only bridge to simulation nodes; no changes to legacy simulation code.

Mission Replay
Time-ordered reconstruction from 42 recorded mission events.

Reporting
Automated mission summary and export bundle generated at mission close.

Roadmap to V1.1

Sprint Zero closes the acceptance milestone. V1.1 extends validated capabilities for stakeholder demos and expanded scenario coverage.

Milestone	Status	Scope
V1.0 · Sprint Zero	Complete	Acceptance demonstration · simulation environment
V1.1 · Dashboard	Next	Enhanced mission map, timeline, and risk visibility
V1.1 · Monte Carlo	Planned	Statistical stress testing for mission profiles
V1.1 · Scenario library	Planned	Additional BW-C45 reference scenarios
V1.1 · Export formats	Planned	Investor and grant-ready report templates

Mission OS is a research and development platform. Demonstrations were performed in a simulated environment. Results do not represent field validation or real-world mission authority. Mission OS validates missions; it is not an autopilot or flight controller.