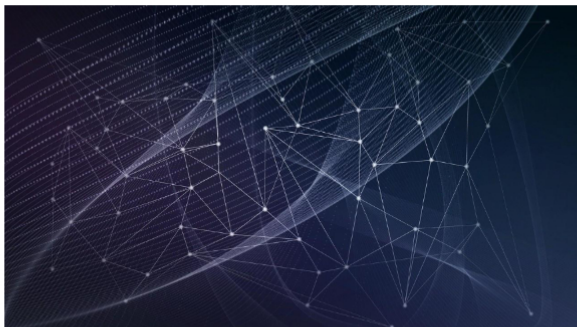


Before the Threat Arrives: LVC as Golden Dome's Realistic Training and Integration Engine



Frequency wave

Jan 21, 2026



Golden Dome must be ready on day one—and that means operators need a place to practice against the threat before it arrives. Live-Virtual-Constructive (LVC) testbeds provide that environment: a realistic training and experimentation space where crews can rehearse, refine, and stress-test tactics under the same conditions they will face in real operations. Golden Dome also requires rapid prototyping and phased fielding, and LVC allows new concepts to be modeled, rehearsed, and evaluated long before billion-dollar deployments.

"An LVC testbed, by its nature with simulation, lets us run multiple scenarios repeatedly to determine best use. We can model out reality first—then put physical things in place," said Justin Morgan, Lead Intelligence Research Analyst at Parallax Advanced Research/Ohio Aerospace Institute.

This includes planning left of launch.

"We can't wait until after the launch to try and thwart a raid. We must be left of launch—modeling how adversaries communicate and coordinate so we can detect indicators early and preemptively disrupt," said Morgan.

High-fidelity adversary models are essential to this realism.

"You need fidelity. Model the systems-of-systems—the comms, radars, satellites—close to real life. Then you can explore multiple courses of action and find gaps before the real fight," said Tim Heggedahl, Senior Intelligence Research Analyst at Parallax/OAI.

Heggedahl compares it to rehearsing a play: first the lines, then the scenes, then the full-dress rehearsal. LVC allows operators to build toward mission readiness in that same layered way.

"LVC gives us a sandbox to identify vulnerabilities and mitigation strategies before they hit the outside world," he added.

Digital twins and commercial sensor feeds further strengthen the environment by revealing capability gaps before hardware is deployed.

"If we integrate real-world data into virtual environments, we can identify gaps and direct resources toward filling them—rather than duplicating what already exists," Morgan said.

LVC also allows planners to stress-test networks under real crisis conditions.

"Imagine when missiles are inbound—public and military networks will be flooded. LVC helps us see what gets lost in the traffic and decide how to prioritize or cut pipelines," said Morgan.

In short, LVC is more than simulation—it is a proving ground for realism, early detection, and resilience. Parallax/OAI's expertise in LVC experimentation ensures Golden Dome concepts can be modeled, stressed, and refined in secure environments before costly deployment, reducing risk while accelerating integration. For the operator, LVC delivers confidence. For the architect, it delivers insight. And for the mission, it delivers resilience. Parallax's LVC environments ensure Golden Dome is not just engineered—it is rehearsed, validated, and battle-ready.

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About Parallax Advanced Research and the Ohio Aerospace Institute

Parallax Advanced Research is a research institute that tackles global challenges through strategic partnerships with government, industry, and academia. It accelerates innovation, addresses critical global issues, and develops groundbreaking ideas with its partners. With offices in Ohio and Virginia, Parallax aims to deliver new solutions and speed them to market. In 2023, Parallax and the Ohio Aerospace Institute formed a collaborative affiliation to drive innovation and technological advancements in Ohio and for the nation. The Ohio Aerospace Institute plays a pivotal role in advancing the aerospace industry in Ohio and the nation by fostering collaborations between universities, aerospace industries, and government organizations, and managing aerospace research, education, and workforce development projects.

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