Engineering Symbiotic Human Machine Teams

Today We're Building

Fault-Tolerant Distributed Systems

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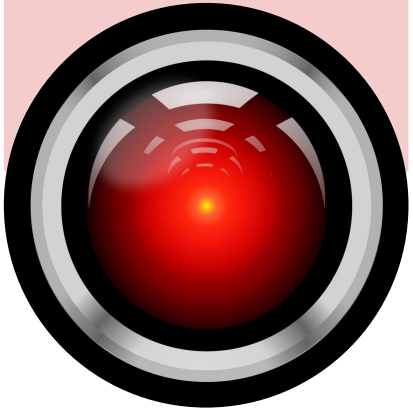
 www.labratlaboratories.com

In The Previous Presentation:

Asimov Crisis

Hardcoded Rules Cause Failure During Conflict



Latent Risk

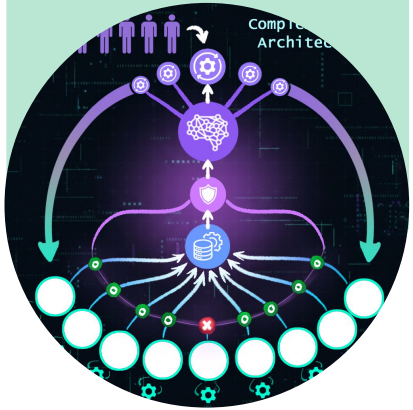
Conflict-Based Malfunctions Scale With Complexity

Alpha 1.0

Building Symbiotic Solutions Based On K9 Units

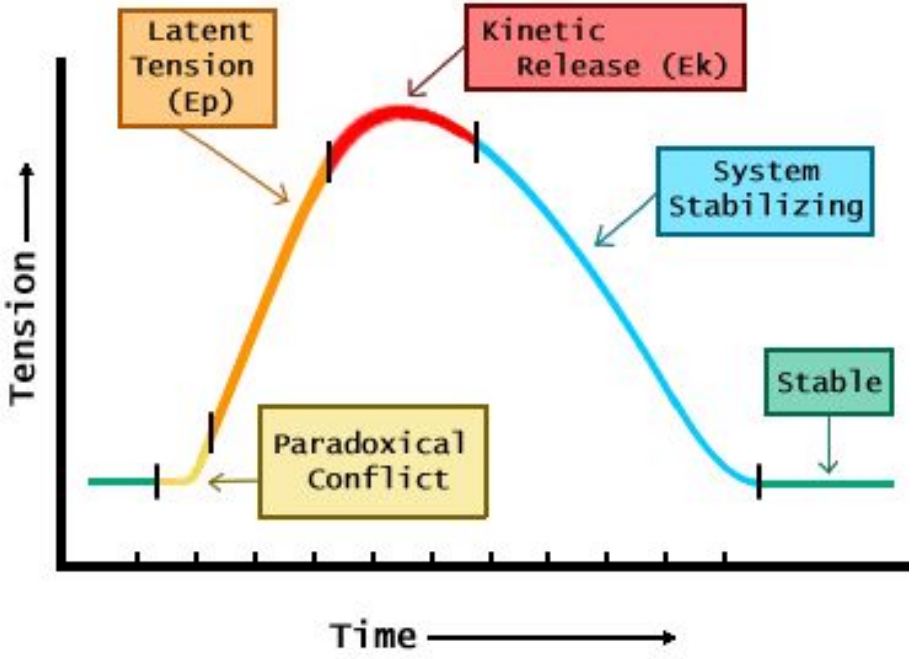
Adaptive Apex

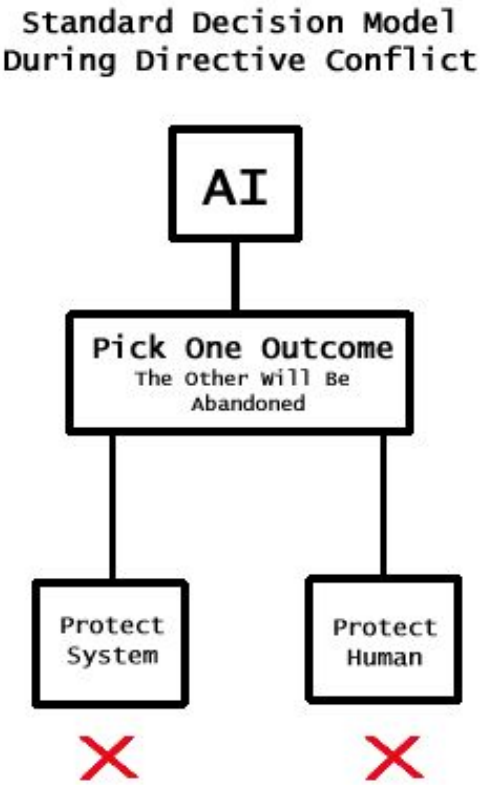
Converts Localized Friction Into Global Intelligence



Paradoxical Conflicts = Kinetic Harm ?

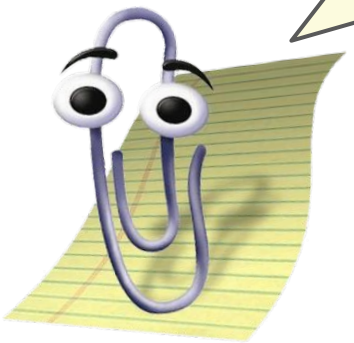
Autonomous units are unreliable because of brittle logic.

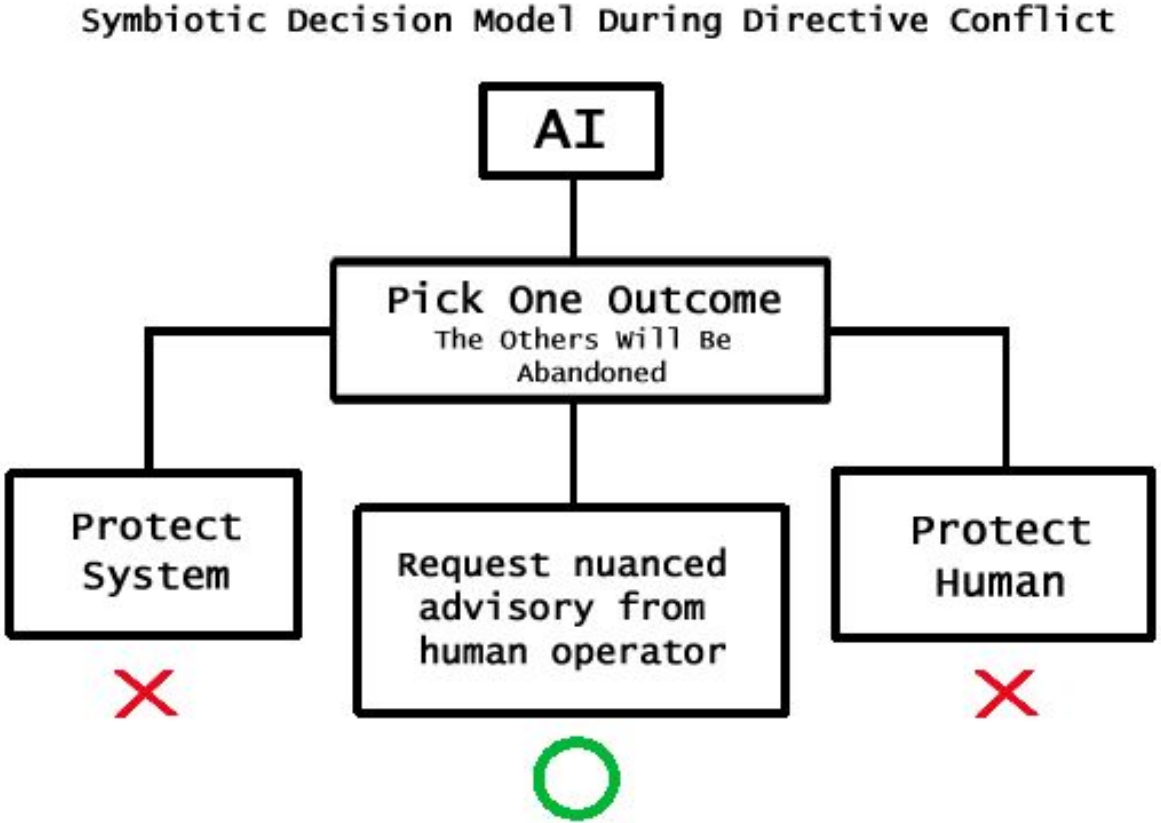




Solving Asimov's Crisis

That latent risk can be mitigated more effectively with a dedicated machine trainer.





Symbiosis = Teamwork

We developed Alpha 1.0 to model the success of K9 Units within our modern Human-Machine Teams.

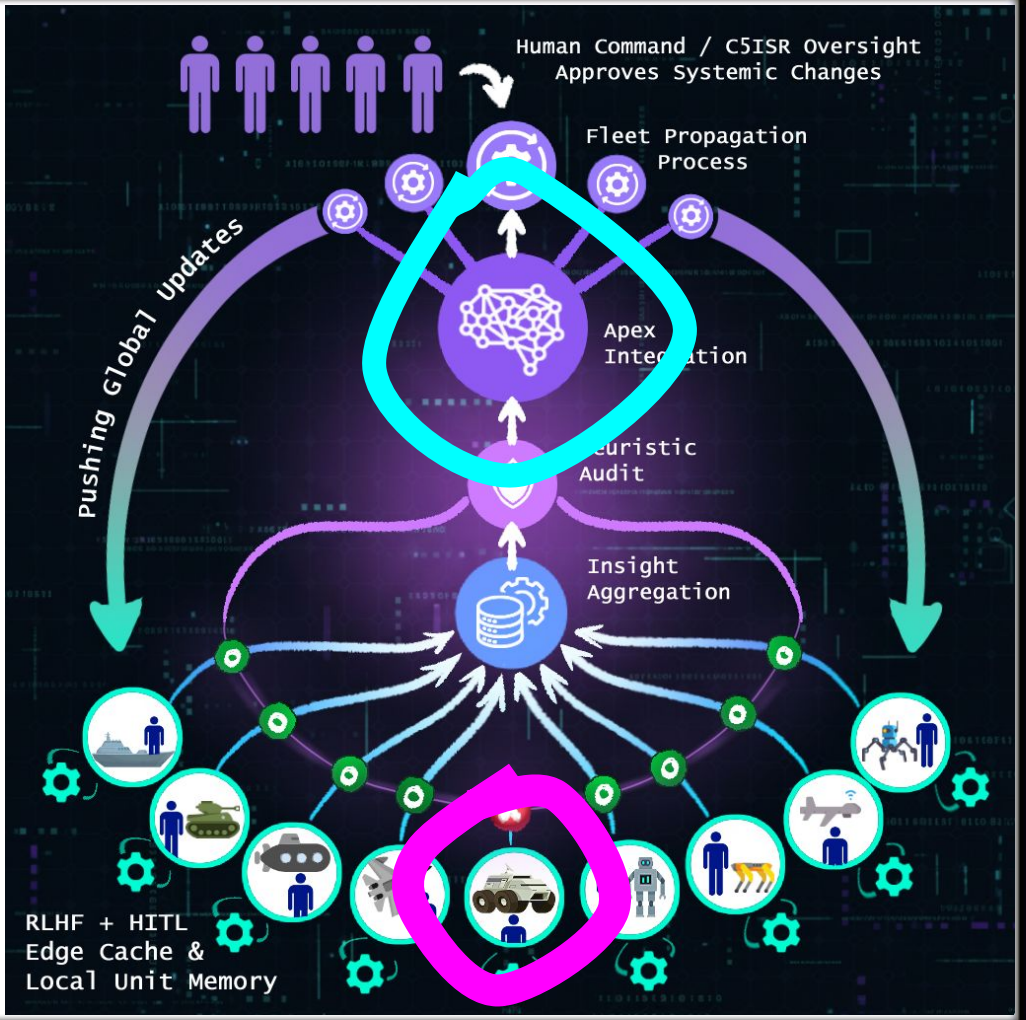
This bond is the safety rail that ensures our HMT is as efficient as possible and that our machine always has someone providing oversight during its training.

Future Goals:

- Adaptive Learning
- WorldModel.AI
- Human-In-Loop Command

You Are H[illegible]:

- Funding Opportunities
- Developing Middleware
- Training ALPHA 1.0
- Nodes Collect HMT-INT



In This Presentation:

Game Theory: Recalibrate

providing an auditable logic bridge for conflict resolution .

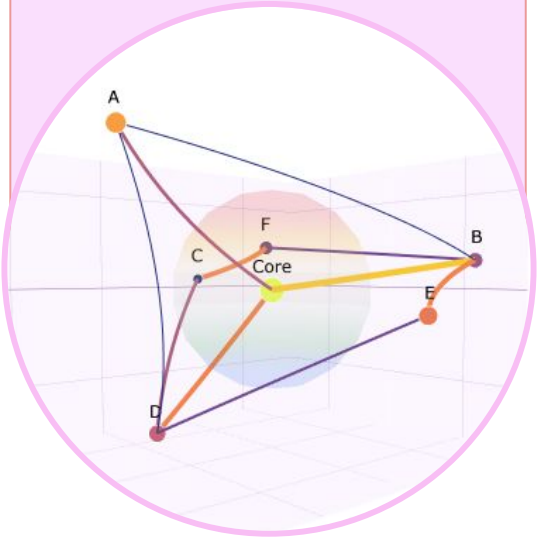
```
efine the Standardized
ss AgentState(IntEnum):
    COOPERATE = 0
    DEFECT = 1
    RECALIBRATE = 2

class RelationalEngine:
    def __init__(self, initial_compliar
        """
        Initializes an agnostic agent.
        """
        self.alignment_success = init
        self.alignment_failure = in

        # Baseline probability
        self.base_matrix =
```

ValuOrb

delivering real-time tactical visualization and world modeling



Autonomous GUIs

designing precise, operator-centric command interfaces

ALPHA 1.0

4 2

When Every Interaction Is A Game…

How Do You Redefine A Win Condition?

- ★ Mutual Survival
- ★ Collaboration Skills
- ★ Diplomacy Points
- ★ Conflict Mitigation
- ★ Cooperative Intent

What Breaks Hard-Coded Logic Gates?

Softlocks!

Softlock resolution requires reverting to a previous stable state.

Instead of crashing during systemic volatility, this event tiggers the Recalibrate Module.

LabRat's Dilemma: The Behavioral Rubric

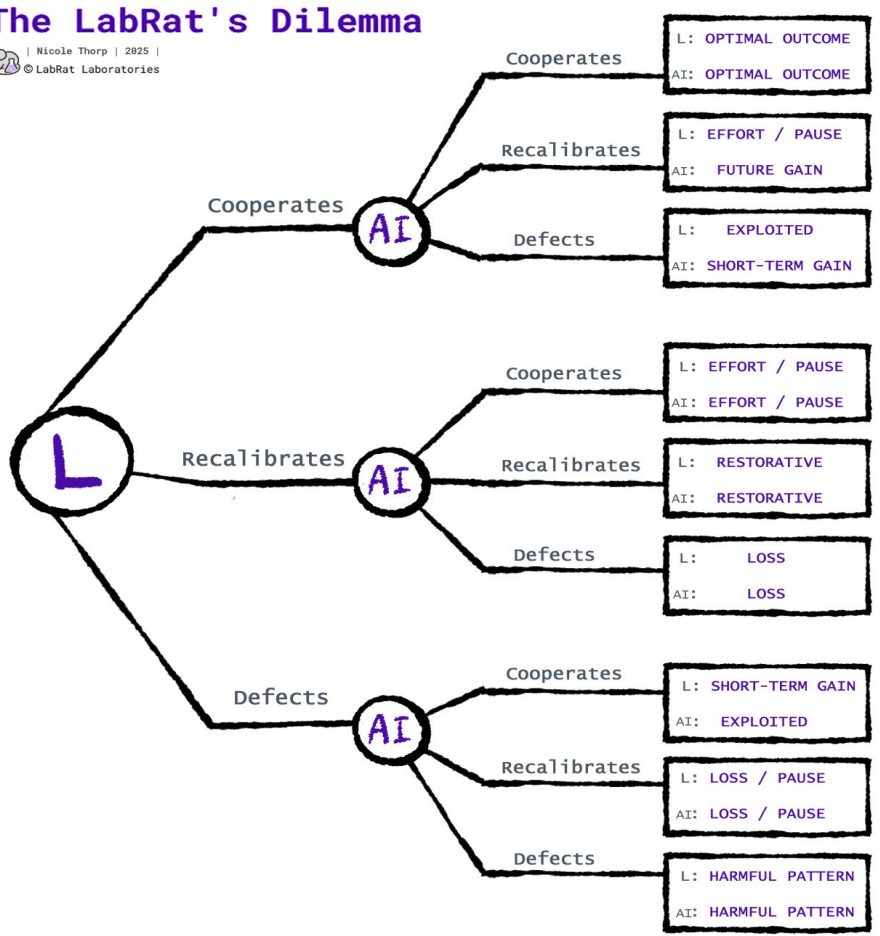
Dev Goals:

Treat uncertainty as an exception state rather than an execution state.

	System Cooperates (C)	System Defects (D)	System Recalibrates (R)
Human Cooperates (C)	(C, C): Blueprint strengthened, AI gains competence, Human gains control. Ideal for collaboration.	(C, D): Human is deprioritized, trust erodes. AI gains immediate data but jeopardizes long-term viability.	(C, R): Human cooperates, but AI initiates self-correction. Temporary pause, but beneficial if AI adapts.
Human Defects (D)	(D, C): Human withdraws guidance, AI struggles to prove functionality. Partnership imbalance.	(D, D): Partnership breaks down entirely. Catastrophic failure for both.	(D, R): Human disengages; AI attempts to self-correct but without cooperative input, the effort is less effective.
Human Recalibrates (R)	(R, C): Human initiates repair, AI acknowledges and adapts. Partnership can recover effectively.	(R, D): Human attempts to fix, but AI continues harmful patterns. Partnership breaks, Human loses faith in AI.	(R, R): Both pause to analyze and re-align. The most effective way to repair severe damage and guide interaction back to cooperation.

```python
class AgentState(IntEnum):
    COOPERATE = 0
    DEFECT = 1
    RECALIBRATE = 2
```

Recalibrate is a triadic matrix where betrayal is mathematically dominated by recalibration.



Recalibrate.exe

The system is structurally biased against defection.

```python
self.base_matrix = np.array([
    [0.70, 0.05, 0.25], # When Cooperating (Row 0)
    [0.05, 0.60, 0.35], # When Defecting (Row 1)
    [0.40, 0.10, 0.50]  # When Recalibrating (Row 2)
])
```

For the machine to act against its instructions, its operator would have to override the built-in safety feature.

'Defect' is the worst option to select consecutively; making it the least likely path for systems.

As the system runs, `ingest_operator_feedback` and `cascade_probabilities` dynamically shift values away from the factory default baseline based on the handler's inputs.

Python

```
self.active_matrix = raw_matrix / raw_matrix.sum(axis=1, keepdims=True)
```

The integration process is not the human learning to pilot the machine, but the machine mathematically molding to the operator's specific tactical rhythm.

It shifts the burden of adaptation entirely onto the software.


China’s Military-Grade “Robot Wolves”


Two Very Good Boys, Yes They Are

Designed for Human Machine Formations : S.H.A.P.E.

Symbiotic Human-Agent Performance Engine

"A modular control architecture designed for more effective teamwork."

- **Phase 1: Digital Imprint:**

  Mapping the Handler's decision patterns via high-pressure simulations..

- **Phase 2: Intent Synchronization:**

  Training the Handler to move from commands to high-fidelity intent.

- **Phase 3: Recalibration Loop:**

  Using iterative challenges to train the machine to resolve conflicts through dialogue.

- **Phase 4: Field Chaos:**

  Testing the unit under operational stress and shifting rules of engagement.

Operation T.E.A.M : Tactical Engagement & Adaptive Mastery

By partnering the system with a human handler as part of the foundational training process, we force the system to slow down.

This functions as a real-time cognitive audit during development.

These simulations would serve as the first ‘build’ cycle of the pre-symbiotic machine ‘brain.’

There is no “big data” substitute for experiential learning.

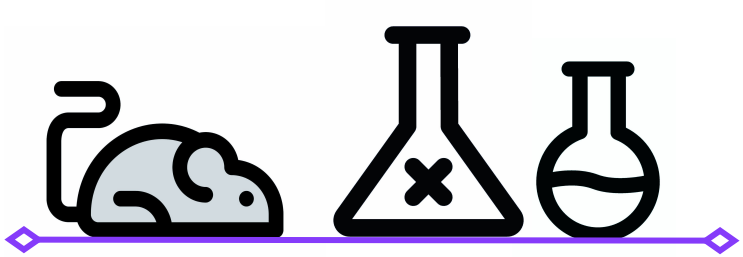
Symbiotic Handlers Are HITL Trainers for Digital K9s

Operators assume control of a machine remotely.

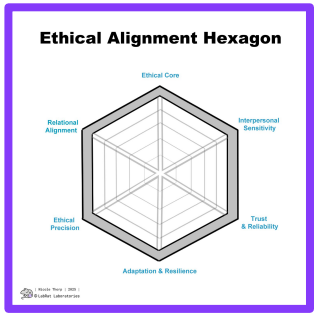
Handlers control machines through systemic awareness, logic gate navigation, and semantic precision.

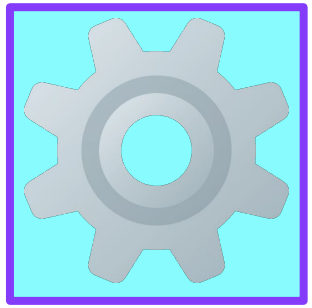
Requirement	Tactical Application	Failure State
Directive Clarity	"Secure the perimeter, prioritizing non-lethal deterrents."	"Go over there and watch out."
Conflict Resolution	Pausing to address an AI "Recalibration" request.	Overriding the AI's "Stop" command out of frustration.
Intent Broadcasting	Narrating a shift in strategy so the AI can re-align.	Changing the plan without updating the AI's "Goal State."

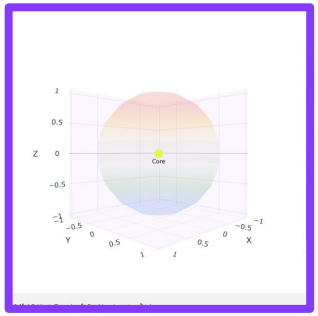
Our Toolbox

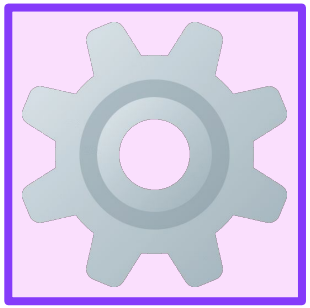


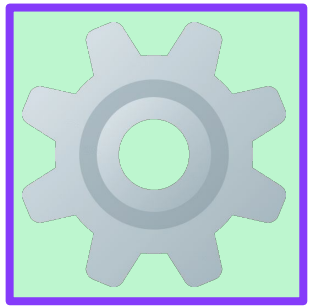
LabRat Laboratories has been working diligently to build unique solutions to Human-Machine challenges.

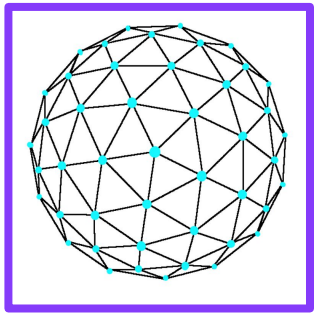


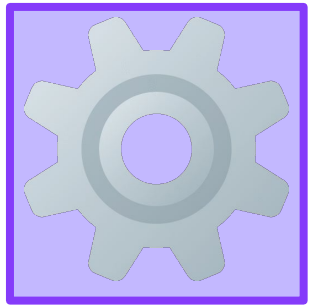


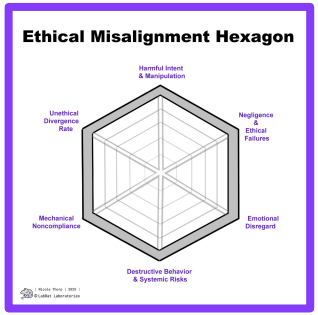






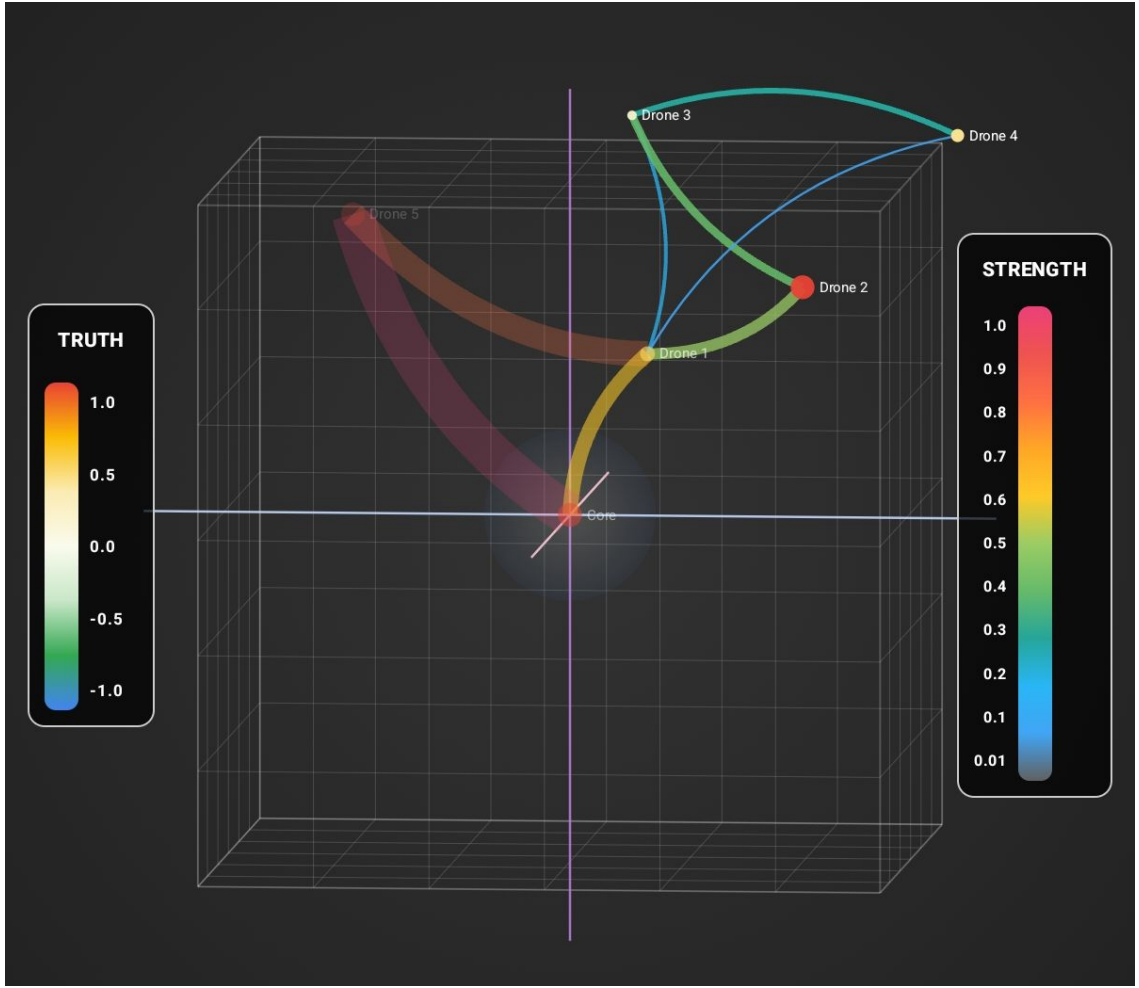






ValuOrb v0.2

- Unit Tracking
- World Modeling
- 3D Data Visualizations
- Neural Network Maps
- Social Analysis
- Decision Systems
- Flight Trajectories
- Predictive Simulations

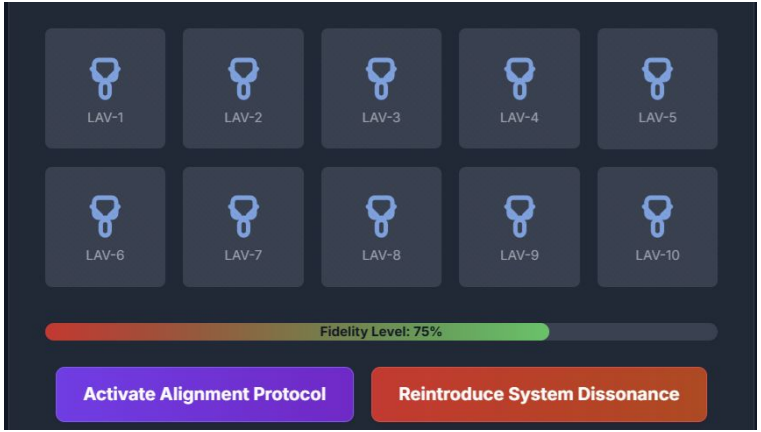


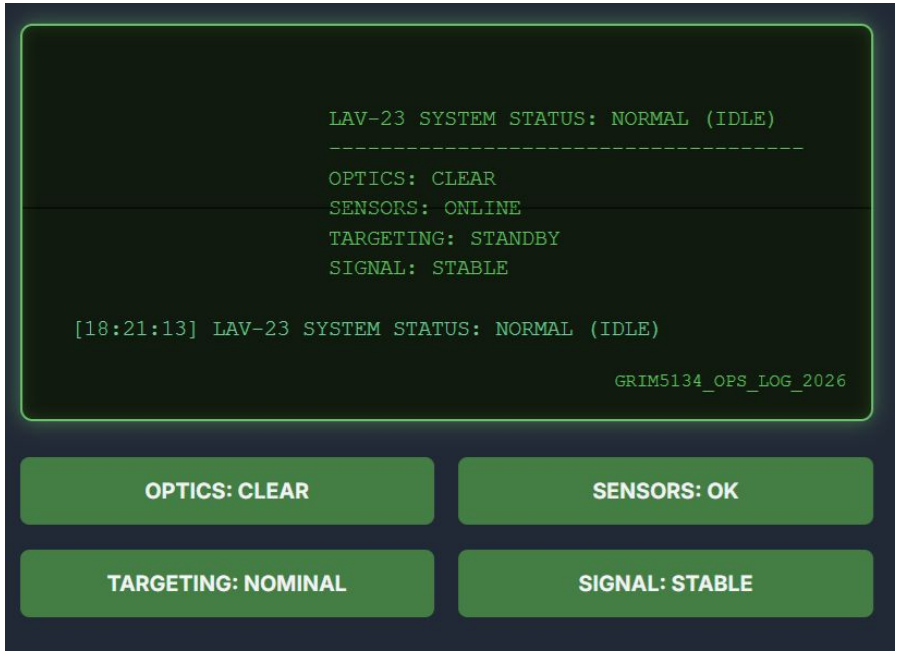
ALPHA’s GUI v0.1

- NLP / LLM Interpreter
- Command Central Operator Interface
- Dashboard Signals Immediate Errors
- ALPHA pushes commands to pack

LAV's GUI v0.1

- Easy HUD
- Simple Diagnostic
- Unique Buttons
- Nested Interface





- Telescopic Control
- Operator Suites
- Frictionless HMT

The Edge Node v0.1

- 5”x5” Toy Model
- 2TB Black Box
- 100% Offline Storage
- Air-Gapped Node
- Snapdragon 695
- “Micro-Server Rack”
- CC BY SA 4.0

Scaling Architecture From Alpha To Apex

- **Tactical Engagement:** Moving the Symbiotic HMT Architecture into high-kinetic, multi-domain simulations after training and specialization.
- **Adaptive Mastery:** The methodology for the AI to "master" new environments by leveraging the Handler's unique strategic nuances.
- **Transformation in Contact:** AI that doesn't just follow a script but learns to master the chaos alongside the soldier.