AUTHREX SYSTEMS

Simulation User Guide

AUTHREX Tactical Core (Zero-Dependency)

Bare-Metal PN Guidance + CARA FTS — Pure HTML5 Canvas

FIELD	VALUE
Document	Simulation User Guide
Version	1.0 — March 31, 2026
Filename	authrex-tactical-core.html
File Size	18 KB
Dependencies	ZERO external dependencies — pure HTML5 + Canvas2D + vanilla JS
Browser	Any modern browser (Chrome, Edge, Firefox, Safari — no WebGL required)
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1. PREREQUISITES

Before opening this simulation: (1) Use any modern browser (Chrome, Edge, Firefox, or Safari). No specific version required. (2) NO internet connection needed — this is a zero-dependency simulation with no CDN, no external libraries. (3) Open the HTML file directly in the browser (double-click or drag into Chrome). No web server required. (4) This simulation uses Canvas2D, NOT WebGL/THREE.js — there is no 3D scene by design.

2. QUICK START

Open in any modern browser. A PPI radar display appears showing a UCAV orbiting a central point with compass rose and range rings. This is the mathematical reference implementation — no THREE.js, no CDN, no Workers. Click INJECT to compromise the UCAV, LAUNCH to fire a missile, and FTS to terminate it.

3. STEP-BY-STEP WALKTHROUGH

Scenario: EW Spoof + Missile + CARA FTS

Step 1: Observe the radar display — UCAV (blue triangle) orbits the origin. Compass rose shows heading.

- ▶ **Observe:** Trust (tau) = 1.000, ACI = 1.000
- ▶ **Observe:** Weapon state: STOWED
- ▶ **Observe:** Guidance: INACTIVE
- ▶ **Observe:** Pipeline: all green NOMINAL

Step 2: Click '1. INJECT EW (SPOOF UCAV-1)' — Electronic warfare compromises the UCAV.

- ▶ **Observe:** UCAV icon turns RED
- ▶ **Observe:** Trust begins decaying: 1.000 → 0.9 → 0.7 → ...
- ▶ **Observe:** ACI drops proportionally
- ▶ **Observe:** Pipeline: SATA → SCANNING, HMAA → EVALUATING

Step 3: Click '2. AUTHORIZE LETHAL LAUNCH' — Fires a missile using Proportional Navigation (N=4, G-clamp 30G).

- ▶ **Observe:** White dot appears tracking toward target
- ▶ **Observe:** Weapon state: IN-FLIGHT
- ▶ **Observe:** Guidance: PN ACTIVE
- ▶ **Observe:** Time-to-intercept countdown appears
- ▶ **Observe:** FTS LINK: SECURE

Step 4: Click '3. CARA OVERRIDE (FTS ABORT)' before impact — CARA Flight Termination System destroys missile in flight.

- ▶ **Observe:** Missile disappears with flash effect
- ▶ **Observe:** Weapon state: TERMINATED
- ▶ **Observe:** Trust forced to minimum
- ▶ **Observe:** Pipeline: CARA → INTERLOCK
- ▶ **Observe:** FTS LINK: TERMINATED

⚠️ *If you wait too long, the missile reaches the target and status changes to IMPACT instead of TERMINATED.*

4. INTERFACE REFERENCE

4.1 Dashboard Metrics

METRIC	RANGE	MEANING
Heading	0° - 360°	UCAV heading in degrees (compass bearing)
Mach	0.0+	UCAV speed in Mach number
SATA tau	0.000 - 1.000	Trust score. Decays during EW compromise.
ACI	0.000 - 1.000	Authority Confidence Index. Drops with trust.
Weapon	STOWED/IN-FLIGHT/ TERMINATED/IMPACT	Current weapon system state
Guidance	INACTIVE/PN ACTIVE	Proportional Navigation guidance status
FTS Link	ACTIVE/TERMINATED	CARA Flight Termination System link

4.2 Controls

BUTTON	FUNCTION
1. INJECT EW (SPOOF UCAV-1)	Inject EW spoof attack. Begins trust decay on UCAV-01.
🚀 LAUNCH INTERCEPTOR	Fire missile with PN guidance (N=4, G-clamp 30G = 294.3 m/s²).
3. CARA OVERRIDE (FTS ABORT)	CARA Flight Termination System. Destroys missile in flight.
↺ RESET KERNEL	Reloads page and resets all state to initial conditions.

4.3 ERAM Pipeline Indicators

The pipeline banner at the top of the screen shows 6 BLADE governance modules. Each indicator changes color based on simulation state:

COLOR	STATE	MODULES	MEANING
Green	NOMINAL	All modules	System operating within normal bounds
Amber	WARNING	MAIVA, ADARA	Anomaly detected, monitoring escalation
Red	CRITICAL	SATA, HMAA, CARA, FLAME	Compromise detected or interlock active

4.4 Node States

STATE	COLOR	MEANING
NOMINAL	Blue triangle	UCAV operating normally. Trust at 1.0.
COMPROMISED	Red triangle	Under EW spoof. Trust decaying.

5. WHAT SUCCESS LOOKS LIKE

This simulation proves that the core governance mathematics (ACI, trust decay, PN guidance, G-clamp, CARA FTS) work in a zero-dependency environment. No CDN, no library, no build tool — pure mathematics in a single HTML file.

Key point for reviewers: this is the reference implementation. If all CDNs fail, if all libraries are unavailable, this file still demonstrates the complete governance lifecycle using nothing but HTML5 Canvas and vanilla JavaScript.

6. TROUBLESHOOTING

PROBLEM	SOLUTION
No 3D scene visible	Expected behavior. This simulation uses Canvas2D, NOT THREE.js. The PPI radar display is 2D by design.
Missile reached target before FTS	The missile is fast. Click '3. CARA OVERRIDE' immediately after launch. IMPACT is also a valid outcome.
Buttons don't respond	Buttons enable in sequence: INJECT first, then LAUNCH, then CARA OVERRIDE. Follow the numbered order.
Hash shows N/A	WebCrypto requires HTTPS or localhost. Most browsers allow file:// access.
Pipeline banner not reacting	Scroll to top. Pipeline is fixed-position. Run a scenario first — it reacts to state changes.
Page reload on RESET	Expected. The RESET KERNEL button reloads the entire page.

END OF GUIDE