

# VEHICLE SYSTEMS LAB

Technology Research Laboratory for Auditable Complex Systems

## VEHICLE-CPS

### Civil Protection Systems

### Funding Brief

Developed by	VEHICLE Systems Lab
Associated framework	Borda Milan Pyramid · VEHICLE Framework · DOI 10.5281/zenodo.20046955
Website	<a href="https://vehiclesystemslab.com">https://vehiclesystemslab.com</a>
Contact	<a href="mailto:contact@vehiclesystemslab.com">contact@vehiclesystemslab.com</a>
Status	Research architecture, technical demo and pilot-ready concept

### PUBLIC INVESTOR BRIEF

Prepared for investors, strategic partners, institutions and technical reviewers.

## Document navigation

This brief is structured for investor review first, followed by technical and operational details. The commercial agency-specific proposal remains an internal document and is not included in this public package.

## Executive Funding Summary

VEHICLE-CPS is an auditable civil protection architecture designed to anticipate structural risk around leaders, institutions, infrastructure and critical decision environments.

Funding is requested to transform VEHICLE-CPS from a research architecture and technical demo into a validated pilot-ready technology system with documented protocols, operational cost structure, hardware integration plan, simulation environment, investor materials and institutional deployment pathway.

### Investor position

VEHICLE-CPS is not a request for funding for an isolated software idea. It is part of VEHICLE Systems Lab, an independent technology research laboratory developing auditable architectures, prototypes, simulations and decision-support systems for complex environments.

## 1. Funding Purpose

The purpose of this funding request is to support the development of VEHICLE-CPS into a validated civil protection technology prototype and controlled pilot system.

- completion of the CPS technical demo package
- formalization of the mathematical and operational architecture
- hardware integration planning for UWB/BLE wearable devices
- development of a real-time dashboard prototype
- simulation of dynamic protection rings
- refinement of P0-P6 operational regimes
- pilot protocols for 200, 1,000 and 2,500-person environments
- cybersecurity, legal and ethical review
- investor and institutional documentation

## 2. Why This Project Matters

High-risk events and institutional environments often fail at the exact moment when visual security, fixed perimeters and verbal coordination are no longer sufficient.

A protected person may be surrounded by hundreds or thousands of individuals. Agents may see only a small part of the field. Communication may be delayed, fragmented or incomplete. VEHICLE-CPS addresses this structural blind spot by modeling the protection environment as a dynamic graph of nodes, relations, field tension, perimeter continuity and decision pressure.

**The goal is not to replace human judgment. The goal is to give protection teams an auditable layer of structural intelligence before risk becomes irreversible.**

### **3. Current Status**

- institutional concept defined
- technical architecture based on VEHICLE structural logic
- commercial pilot proposal for presidential security use cases
- UWB/BLE wearable architecture concept
- dynamic protection ring model
- P0-P6 operational regime structure
- graceful degradation design principle
- event workflow model
- economic pilot structure
- improved HTML demo available
- AI reference file drafted
- technical brief drafted
- standard download package structure defined

### **4. What Funding Will Enable**

#### **Technical Development**

- complete CPS demo package
- build or refine real-time dashboard prototype
- model dynamic protection rings
- simulate node continuity and intruder discontinuity
- prepare example input/output datasets
- document system architecture

#### **Hardware Integration Planning**

- validate UWB/BLE assumptions
- define wristband or badge specifications
- plan anchor and gate deployment models
- define local server requirements
- estimate maintenance and replacement cycles

#### **Mathematical and Operational Validation**

- formalize T(X) structural tension interpretation
- calibrate P0-P6 regimes
- define false-positive and false-negative review methods
- create simulation scenarios
- define field validation methodology

## Institutional Readiness

- prepare pilot protocol
- prepare operator training materials
- prepare legal and ethical review package
- prepare data governance recommendations
- prepare security agency review materials

## 5. Development Phases

Phase	Objective	Expected outputs
1 - Research Consolidation	Unify CPS documentation, demo logic and operational concept.	Architecture document, technical brief, AI reference, ethical limits, demo structure.
2 - Prototype Development	Build a functional prototype and simulation environment.	HTML dashboard demo, simulated node field, dynamic rings, P0-P6 display, audit log prototype.
3 - Controlled Pilot Preparation	Prepare CPS for review by a civil, institutional or defensive partner.	Pilot protocols, hardware deployment model, operator workflow, escalation protocol, cost plan.
4 - Institutional Pilot and Expansion	Execute controlled pilot, refine system and prepare for scaled deployment.	Pilot report, validation report, lessons learned, deployment plan, support plan.

## 6. Funding Levels

Level	Purpose
Seed Research Support	Documentation, demo consolidation, mathematical architecture, simulation design and technical validation.
Prototype Development Support	Software prototype, dashboard interface, simulation engine, data structures, audit logging and team expansion.
Controlled Pilot Support	Hardware planning, deployment logistics, operator training, privacy/legal review, cybersecurity review and pilot support.
Laboratory Expansion Support	Research staff, software team, infrastructure, documentation, publications, strategic partnerships and future project incubation.

## 7. Estimated Operational Categories

- research leadership
- mathematical modeling

- software development
- dashboard and interface design
- hardware integration research
- UWB/BLE pilot planning
- simulation development
- cybersecurity review
- legal and ethical review
- technical writing
- operator training materials
- website and download infrastructure
- repository maintenance
- institutional outreach
- pilot preparation
- administrative support

### Operational cost plan

A detailed operational cost plan should be published separately as </downloads/cps/VEHICLE-CPS-Operational-Costs.pdf>.

## 8. Pilot Reference Model

The CPS commercial proposal defines a reference pilot model for a 1,000-person high-security event. The reference model includes UWB/BLE wearable devices, UWB anchors, access gates, local servers, operator tablets, dynamic protection rings, event-specific cryptographic identifiers, tamper alert logic, a real-time dashboard, graceful degradation architecture and post-event auditability.

Pilot level	Purpose
200-person pilot	Minimum controlled pilot to validate architecture and workflow.
1,000-person standard pilot	Reference model for high-security event validation.
2,500-person advanced pilot	Scaled controlled environment for stress testing.
5,000-person institutional deployment	Institutional deployment model.
50,000+ multi-site national deployment	Long-term scalable architecture target.

## 9. Strategic Applications

- civil protection
- VIP and leader protection
- presidential security events
- institutional continuity
- public event protection
- infrastructure risk
- emergency planning

- defensive military protection contexts
- space-related protection environments
- human-AI decision support
- custom protection technology projects

## 10. Investor Relevance

VEHICLE-CPS is relevant to investors because it represents more than a single application. It demonstrates that VEHICLE Systems Lab can combine mathematical framework, software demo, hardware integration concept, operational protocol, economic model, ethical safeguards, pilot planning and institutional documentation.

Investment in CPS can also strengthen the wider VEHICLE ecosystem, including MADRE, ODI, SUPRA and ACCESS.

## 11. Partner Relevance

- civil protection agencies
- presidential or governmental security teams
- emergency management institutions
- event security organizations
- critical infrastructure operators
- defense-oriented institutions working in preventive and protective contexts
- space-sector organizations managing high-risk operations
- research institutions studying complex systems and decision support

## 12. Ethical and Institutional Safeguards

VEHICLE-CPS must be developed and deployed under strict ethical boundaries. It must not be used for unlawful surveillance, political persecution, automated coercion, offensive targeting, repression, autonomous enforcement decisions or unauthorized tracking outside the approved operational context.

- legal authorization
- human supervision
- data minimization
- audit logging
- privacy safeguards
- post-event review
- institutional accountability
- clear operating protocols

## 13. Expected Deliverables

- CPS Technical Brief
- CPS Funding Brief
- CPS Operational Cost Plan

- CPS Demo Package
- CPS AI Reference File
- improved HTML dashboard demo
- pilot protocol
- system architecture diagrams
- P0-P6 regime documentation
- hardware integration plan
- cybersecurity checklist
- legal and ethical review checklist
- operator training outline
- institutional presentation materials
- post-event audit report template

## 14. Why VEHICLE Systems Lab

VEHICLE Systems Lab is not a software company and VEHICLE-CPS is not a generic hardware bundle. VEHICLE Systems Lab develops auditable technological architectures that combine structural intelligence, mathematical modeling, prototypes, simulations, documentation and operational planning.

The CPS project shows how the VEHICLE framework can become a concrete technology system capable of supporting civil protection and defensive decision environments.

## 15. Funding Request Statement

VEHICLE Systems Lab seeks funding, strategic investment and institutional partnerships to develop VEHICLE-CPS into a validated civil protection technology prototype and controlled pilot system.

The objective is to build an auditable, human-supervised and ethically bounded architecture capable of supporting civil, institutional, space-related and defensive protection environments.

## 16. Recommended Public Download Structure

Asset	Path
Technical Brief	/downloads/cps/VEHICLE-CPS-Technical-Brief.pdf
Demo Package	/downloads/cps/VEHICLE-CPS-Demo-Package.zip
Funding Brief	/downloads/cps/VEHICLE-CPS-Funding-Brief.pdf
Operational Cost Plan	/downloads/cps/VEHICLE-CPS-Operational-Costs.pdf
AI Reference File	/vehicle-cps-ai-reference.txt

## 17. Contact

For investment, strategic partnership, institutional collaboration, controlled pilot discussion or technical review:

**[contact@vehiclesystemslab.com](mailto:contact@vehiclesystemslab.com)**

### **Canonical Funding Summary**

VEHICLE-CPS is an auditable civil protection architecture developed by VEHICLE Systems Lab. Funding is requested to transform the project from a research architecture and technical demo into a validated pilot-ready technology system for civil, institutional, space-related and defensive protection contexts. The project combines structural risk mapping, dynamic protection rings, wearable technology integration, P0-P6 operational regimes, graceful degradation, human oversight and auditability.