Metacore LLC – Technology Overview

Metacore LLC is an independent research and development company focused on advanced physical-digital systems that integrate sensing, computation, and actuation. The company develops technologies across autonomous systems, photonics, secure embedded infrastructure, and decentralized energy architectures.

Core Technology Platforms

Autonomous Systems	Distributed sensing, detection, mesh coordination, and resilient local autonomy.
Photonic Interfaces	Transparent displays, embedded optics, and compact projection correction.
Secure Embedded Infrastructure	Biometric authorization, tamper detection, integrity checks, and fail-safe control.
Decentralized Energy Systems	Physical energy measurement linked to standardized digital technical units.

Applications

Metacore technologies are relevant to defense and security systems, transportation interfaces, critical infrastructure monitoring and control, and next-generation industrial platforms.

Research Approach

Metacore emphasizes interdisciplinary engineering. Materials science, embedded electronics, distributed computing, human-machine interfaces, and physical actuation are designed together as unified architectures rather than as disconnected layers.

Intellectual Property Snapshot

• Distributed counter-drone system with portable multi-sensor detection, AI-assisted planning, and coordinated micro-drone deployment.

• Transparent display architecture using embedded microstructures within transparent materials to redirect projected light.

• Integrated optical element for correction of keystone distortion in compact embedded projection systems.

• Biometric release system combining authentication, integrity, tamper detection, and contextual decision logic.

• Shape-memory-alloy fail-safe locking and actuation architecture with mechanical self-holding.

• Technical infrastructure linking measured renewable energy to digital units that trigger physical energy actions.

Collaboration Pathways

Metacore is positioned for sponsored R&D;, grant-funded technical programs, defense and public innovation initiatives, industrial co-development, licensing, and strategic investment discussions.