Forward Edge-AI Secures Patent Allowance for Quantum-Resilient IIoT Encryption Device

SAN ANTONIO, TX, UNITED STATES, August 6, 2025 /EINPresswire.com/ -- Forward Edge-AI, Inc., a leader in secure edge computing and quantum-resilient communications, has received a Notice of Allowance from the United States Patent and Trademark Office (USPTO) for its novel Encryption Retransmission Industrial Internet of Things (IIoT) Device for Providing Resiliency Against Quantum-Computer Cyber-Attacks.

> “From tactical units operating in contested environments to critical infrastructure at home, our IIoT device ensures trusted data exchange—secured for today, and against quantum threats of tomorrow.”
>
> *Eric Adolphe, CEO Forward Edge-AI, Inc.*

This patent strengthens Forward Edge-AI’s position at the forefront of next-generation cybersecurity by introducing a tamper-resistant, protocol-free IIoT architecture that prevents unauthorized access to data—even in zero-trust or denied, degraded, intermittent, and limited (DDIL) environments. The system integrates anomaly detection, dual-system-on-chip (SoC) processing, and post-quantum encryption to provide secure, autonomous data collection and transmission.

Forward Edge-AI’s newly patented IIoT encryption device offers a transformative leap in secure military communications, delivering critical capabilities across multiple mission domains. At the forefront is its application in predictive logistics, where the device enables secure, wireless transmission of sensor data from vehicles to command platforms like Army Vantage—even during field operations. The device also enhances tactical edge networks, providing robust, tamper-resistant communications in Denied, Degraded, Intermittent, and Limited (DDIL) environments where traditional systems often fail. As part of C5ISR modernization, the system integrates seamlessly into existing and future command-and-control architectures, supporting the Army’s evolving sensor-to-shooter-to-sustainer paradigm. Its compact, lightweight design makes it an ideal encryption solution for autonomous platforms, including unmanned ground and aerial vehicles, offering embedded security without sacrificing speed, range, or maneuverability.

Beyond the battlefield, Forward Edge-AI’s patented IIoT encryption device offers critical advantages for a range of civilian applications where secure, resilient communications are paramount. In the energy sector, it safeguards remote infrastructure—such as substations, pipelines, and pumps—by embedding encryption directly into field sensors, defending against sophisticated side-channel attacks. Within smart cities, the device protects public safety and

environmental monitoring networks from emerging quantum-era cyber threats. For healthcare and emergency management, it enables real-time, secure telemetry during mass casualty events and disaster response, ensuring that sensitive data reaches decision-makers without compromise. In aviation and transit, the system provides trusted, high-integrity communications for aircraft, drones, and next-generation mobility platforms operating in wireless-reliant environments. These capabilities position the device as a foundational building block for securing critical infrastructure in a quantum-risk world.

The patented device features post-quantum compliant encryption (CNSA 2.0), physically isolated encryption/communication subsystems, tamper-proof design elements and multi-algorithmic anomaly detection using models.

About Forward Edge-AI, Inc.
Forward Edge-AI, Inc. is a fast-growing developer of Artificial Intelligence-based technology solutions focused on public safety, national security, and defense. Forward Edge-AI's mission is to deliver compelling, mass-market AI solutions at the edge to enhance the safety and security of the free world.

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