

Tactical Voice Intelligence Platform

Next-Generation Secure Communication, Control & Intelligence for Tactical Environments

OVERVIEW

The Tactical Voice Intelligence Platform (TVIP) is an advanced, multi-layered communication and automation solution designed to modernize field operations by bridging legacy radio systems with digital intelligence, secure data handling, and voice-activated control. Built upon a foundation of validated RS-232C communication protocols and expanded with RESTful APIs and AI-driven speech recognition, TVIP transforms how military, emergency response, and industrial operations manage voice, data, and device coordination in high-stakes environments.



CORE COMPONENTS

1. Secure Serial Communication Layer

- Enables point-to-point and broadcast file transfer and text chat over RS-232C.
- Modular, cross-platform software supports Windows/Linux with GUI and CLI (Python, PowerShell).
- Integrated with checksum, CRC validation, and real-time fragmentation/reassembly logic.
- Compatible with tactical radios (e.g., SINCGARS) via FTDI USB-to-serial adapters (HDLCD/U-229).
- Custom RS-232C cables ensure ruggedized field deployment.

Key Capabilities:

- ✓ Session-based communication with timeouts, identity control, and read receipts.
- ✓ Offline storage and FIFO retransmission buffer for mission resilience.
- ✓ AES-256 encrypted settings and tamper-evident logs for secure operations.

2. RESTful API Integration Layer

- Translates serial communication data streams into structured, JSON-encoded REST transactions.
- API endpoints (/send, /receive, /status, /log, /config) enable real-time coordination with Command & Control (C2) platforms and cloud services.
- Supports bidirectional communication with multi-threaded handlers and message brokering (WebSockets, MQTT optional).
- Operable in both connected (e.g., SIPRNet) and air-gapped environments.

Key Capabilities:

- ✓ Enables seamless flow of tactical data from field units to command centers.
- ✓ Provides secure and scalable communication infrastructure for hybrid deployments.
- ✓ Enhances interoperability with modern C2 systems and mission dashboards.

3. Voice-Driven Tactical Intelligence Engine

- Converts tactical radio voice streams into real-time text using Whisper STT engine.
- Detects operational keywords and auto-logs critical events.
- Enables voice-to-action control for drones, sensors, alarms, and other mission hardware via IoT interfaces.
- Operates independently at the edge via NVIDIA Jetson modules with GPIO relay integration.
- Stores both audio and text logs in encrypted format for real-time monitoring or forensic analysis.

Key Capabilities:

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- ✓ Provides secure and scalable communication infrastructure for hybrid deployments.
- ✓ Enhances interoperability with modern C2 systems and mission dashboards.

BENEFITS

➤ Easy Setup Across Any Environment

Installs quickly with plug-and-play functionality—no specialized training required.

➤ User-Friendly Interface

Intuitive design lets users operate serial, API, and voice features with minimal guidance.

➤ Reliable Anywhere, Anytime

Works even in disconnected or rugged environments—automatically adapts to the field.

➤ Secure Out of the Box

Built-in encryption and access control ensure safety without complicated configurations.

Tactical Voice Intelligence Platform

Secure Serial
Communication
Layer

RESTful API
Integration Layer

Voice-Driven Tactical Intelligence Engine