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Node V1 iOS App: Detailed Layout and Structure

🔽 **Bottom Tab Navigation (mirroring Node V1 OS firmware)**

1. Map
2. Nodes
3. Teams
4. Radios
5. Settings

These sections are vastly expanded compared to the firmware. Below is a breakdown of each, with all the enhanced functionality enabled by the iOS environment.

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MAP

Overview:

The core feature – a real-time, interactive map showing:

- Your current GPS location
- Breadcrumb trail (speed, elevation, heading, altitude)
- Connected nodes' positions
- Message/event overlays
- Coverage estimation (based on radio power & range)

Key Features:

- 🔄 Real-Time Sync: Pulls GPS + telemetry from Node V1 via Bluetooth or Wi-Fi Direct.
- 🧭 Fullscreen Navigation Mode
- 🎽 Breadcrumb History Layer (color-coded by speed/elevation)
- 🎥 Live Node Indicators: Clickable avatars showing node info
- 📶 Signal Overlay Toggle: Shows estimated mesh coverage
- 📁 Layers Panel:
  - Satellite, Topo, Mesh, Dark, Custom styles
- 📍 Place Pins + Notes (Saved locally or broadcast as messages)
- 🔔 Geofence Alerts (e.g., alert when a team member enters a zone)

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NODES

Overview:

View and manage all active and saved nodes across the mesh.

Key Features:

- 🔍 Search + Filter: By name, signal strength, trust status, or team
- ✅ Trust & Block Controls
- 📄 Node Profiles:
  - Node name
  - Symbol/avatar
  - Hardware type (Node V1, phone app only, etc.)
  - Battery level
  - Last seen
  - Active radios
  - Location history
- 📦 Node Actions:
  - Ping
  - Message
  - Send file/image (if radios support it)

- o Force refresh
- o Set nicknames or permissions
- 📄 Event Log per Node: Message history, join/leave logs, signal metrics

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TEAMS

Overview:

Create, manage, and communicate within groups of users.

Key Features:

- 🧪 Custom Roles & Permissions
- 🔒 Private Channels / Team Chat
- 🧭 Team Tracking View: See all members on the map with a live update stream
- 🚦 Team Status Indicators: Broadcast current status (OK, SOS, tracking, idle, etc.)
- ✉️ Broadcast Tools:
  - o Send message to team
  - o Push alert to devices
  - o Share files or locations
- ✳️ Smart Alerts:
  - o Notify if member leaves zone
  - o Battery below threshold
  - o Signal drops for a member

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RADIOS

Overview:

Control and monitor every radio interface connected to Node V1.

Key Features:

- 📶 Signal Strength Graphs
- 📲 Radio Interface Switcher: Switch active mode between Wi-Fi, LoRa, Cellular, Satellite, Bluetooth
- 🔌 Toggle Radios Individually
- 📡 Radio Health Status:
    - Current link uptime
    - Signal-to-noise ratio
    - Data throughput
- 🛰️ Cellular Diagnostic Tools:
    - BG770A AT command logs
    - SIM card status
    - Tower info
- 📱 LoRa Settings Panel:
    - Power level
    - Bandwidth, spreading factor, frequency
    - Preamble length
    - Encryption keys
- 🔄 Connection Fallback Hierarchy Settings
   - Choose which radio to prefer, and when to fall back

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SETTINGS

Overview:

All settings from Node V1 OS, expanded and visualized.

Key Sections:

- ⬛ Profile Settings:
  - Name, symbol, encryption key, avatar
- 📂 Persistent Storage Manager
  - View and export settings, logs, trails
- 🔒 Security Controls:
  - Trusted nodes list
  - Encryption toggle
  - Firmware lockout (e.g., disable physical menu without app connection)
- 🧠 Firmware Update Panel
  - Push OTA updates to Node V1
  - Monitor update progress
- 🕹️ Custom UI Designer:
  - Change screen layout on Node V1 from the app
  - Create presets (e.g., tactical mode, map-focused mode)
- 🛠️ Advanced Debug Mode (developer mode)
  - Serial console
  - AT terminal passthrough
  - Packet sniffer
  - Log viewer

💡 Additional App Features

🧭 Home Dashboard (optional landing page)

- Overview of current node status
- Quick-access buttons for "Ping Team," "Send Location," etc.
- Network strength gauge

🔔 Push Notifications

- Receive messages or status alerts from other nodes
- SOS alerts, disconnect warnings, team location changes

🔄 Sync System

- Automatic sync of logs, messages, settings, and locations between phone and Node V1
- Local caching if connection drops

📁 Export & Share

- Export breadcrumb trails, team movement, node history as CSV, KML, GPX
- Share live session or node ID with QR code or encrypted link

🔧 App Settings

- Dark/light mode
- Enable background GPS
- Auto-reconnect to node
- Offline maps caching

🔗 Connectivity to Node V1

- Primary connection: Bluetooth LE or Wi-Fi Direct
- Backup: Cable (USB-C) with direct serial bridge
- Encrypted handshake to verify identity
- Option to pair multiple Nodes for diagnostics or multi-device control

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Final Notes

This app becomes a command center for Node V1. Think of the device as a powerful but compact terminal, and the app as a tactical interface — ideal for explorers, teams, emergency services, and mesh enthusiasts. You'll have seamless coordination, enhanced controls, and a beautifully rendered UI that feels natural.