

Nodelet Functions & Solutions

1. No-Smartphone Access

Problem: No smartphone or app necessary, as many passengers struggle with app-based systems.

Nodelet Solution: A simple fob-style pocket device, like a Life Alert or key fob, that lets users request a ride without needing a smartphone app or access to the internet.

2. Reliable Service in Low/No Internet Areas

Problem: Many parts of Alaska and rural America lack stable cellular coverage or Wi-Fi.

Nodelet Solution: Uses LoRa for long-range, low-bandwidth communication, enabling ride requests over miles without internet.

3. Identity & Consent Without Centralized Logins

Problem: Existing systems require usernames, passwords, or third-party authentication.

Nodelet Solution: Each Nodelet carries an encrypted keypair (e.g., Nostr/Bitcoin keys) enabling:

- Decentralized identity
- Ride consent and authorization
- Guardian or medical delegation signatures

4. HIPAA-Compliant Ride Logs & Billing

Problem: Medicaid/NEMT rides require medical-grade privacy and audit trails.

Nodelet Solution: Encrypts and logs metadata (pickup time, identity signature, route hash) to support compliant billing and reporting.

5. Trustless Local Mesh Coordination

Problem: Centralized dispatch systems create bottlenecks and single points of failure.

Nodelet Solution: Enables peer-to-peer ride coordination through LoRa and Nostr, fostering resilient, community-driven dispatch.

6. Secure Access

Problem: Passengers need a way to verify and authorize rides without relying on traditional interfaces.

Nodelet Solution:

- Confirms the correct passenger is entering the vehicle
- Provides a verifiable consent signal for ride authorization

7. Offline Access to Emergency Support

Problem: People may need to request help even when there's no internet or cell service.

Nodelet Solution: Broadcasts emergency signals via LoRa to nearby nodes or caregivers, creating a local safety net.

8. Hardware Design & Resilience

Problem: Device failure due to power loss or manufacturing issues can compromise accessibility and reliability.

Nodelet Solution:

- All schematics (PCB layouts, enclosure files, BOMs, and firmware) are open-source, allowing for local fabrication and full auditability.
- Crank-powered dynamo included for off-grid emergency charging.
- Designed with rugged, modular components and low-power LoRa operation to ensure long battery life and field resilience.
- Minimum runtime: 3+ months idle or 1+ week active use on a full charge.