



# FerryLight

## The Digital Lifeline for the North Shore

A comprehensive real-time community information system  
for the Englishtown ↔ Jersey Cove route. v5.2.6 Beta

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# The Geography of Uncertainty

## The 3-Minute Crossing vs. The 25-Minute Loop



**The Constraint:** Ferry Capacity ~15 Cars

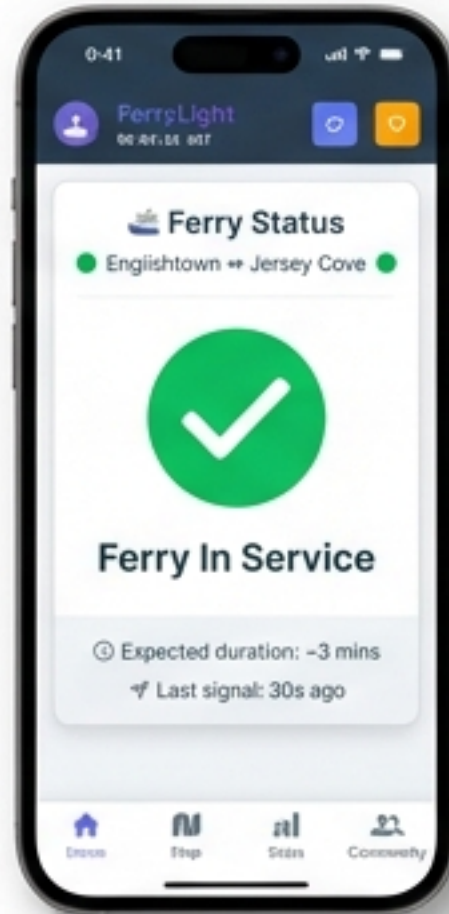
**The Risk:** Summer wait times can exceed 30+ minutes (2-3 ferry loads).

**The Pain Point:** If the ferry is suspended, the driver must backtrack. The decision to wait or drive around must be made *before* reaching the dock.

**The Dilemma:** "Do I wait, or do I drive around?"

# More Than a Tracker: A Community Hub

in Public Sans, Deep Maritime Blue: Bridging the gap between data and daily life.



Real-time AIS Tracking



Weather & Alerts



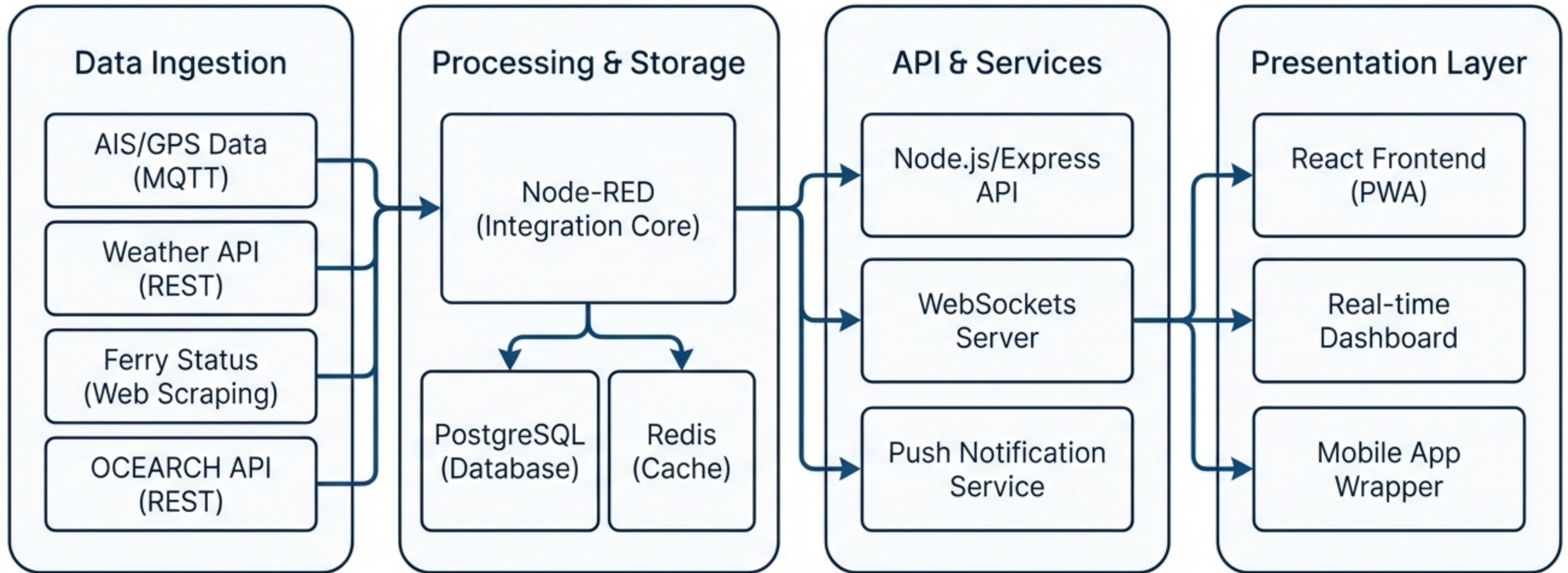
Smart Push Notifications



Community Events & Music

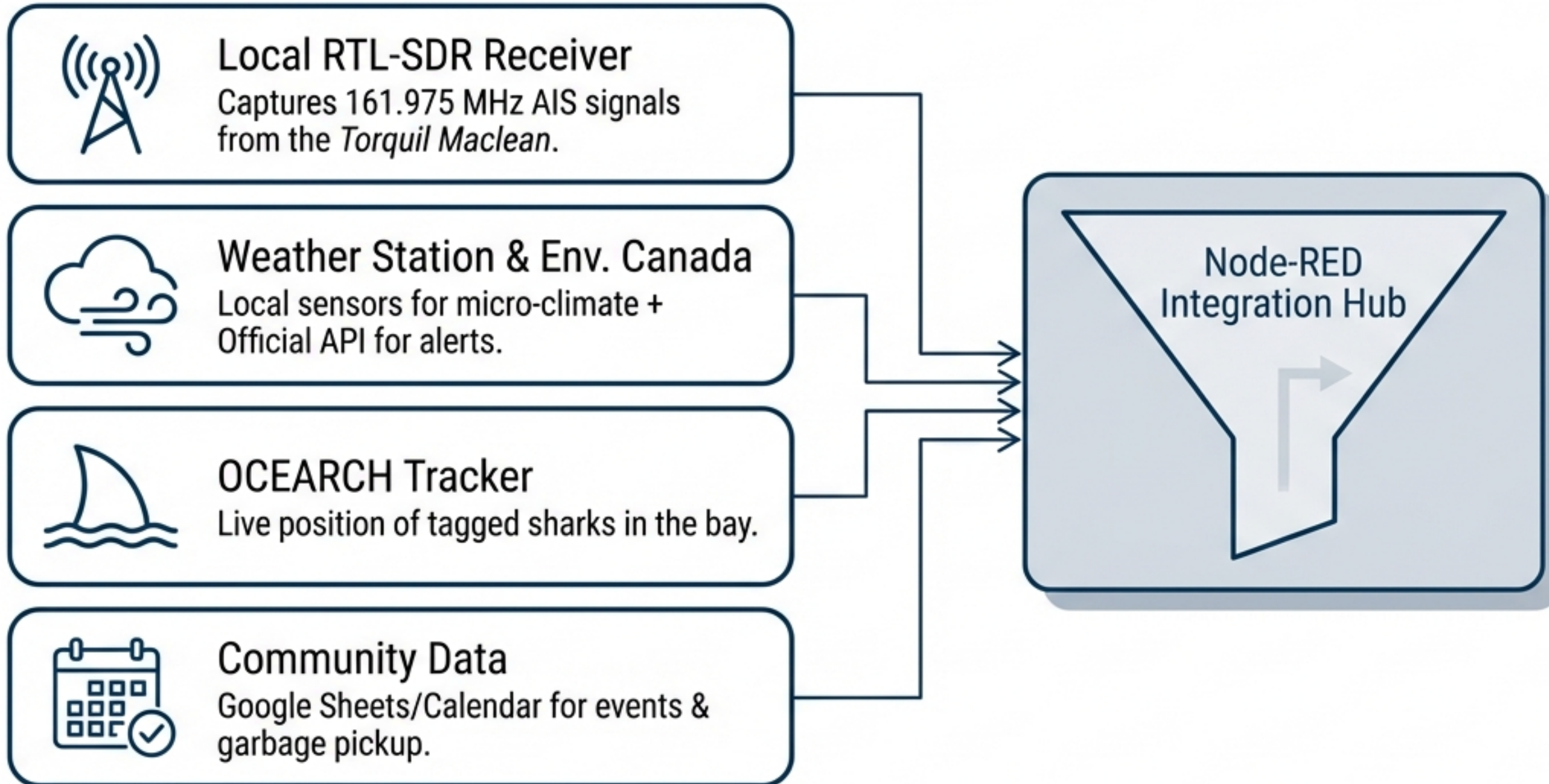


# A Unified Architecture for a Connected Community



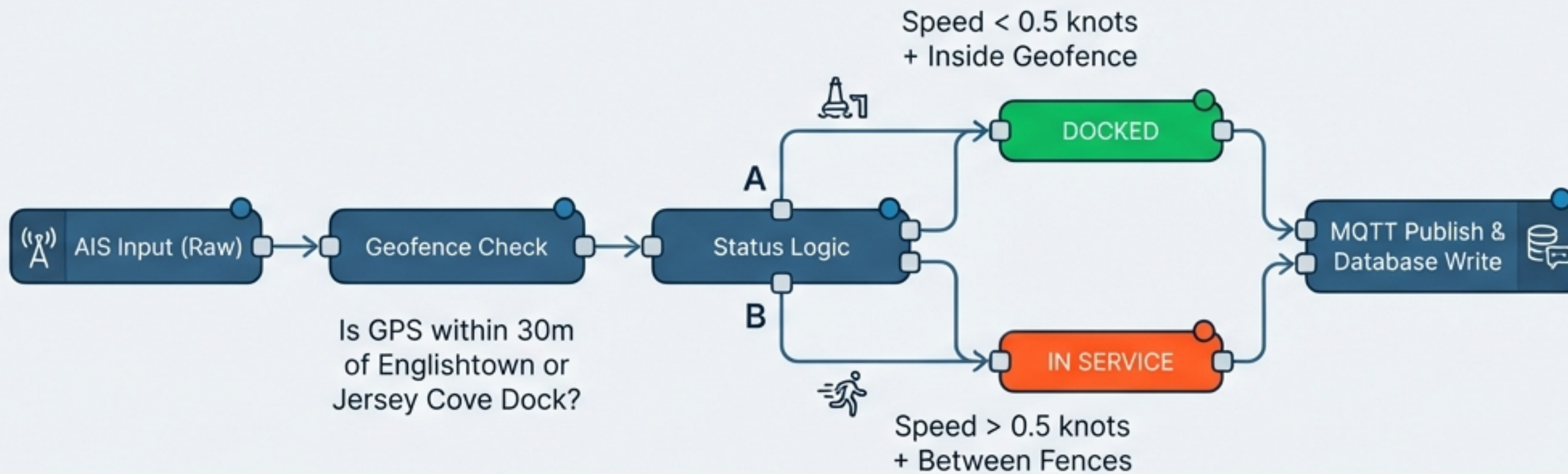
# Listening to the Environment

Ingesting diverse data streams via hardware and APIs.



# The Nervous System: Node-RED Logic

Normalizing chaotic real-world data into structured state.



  
**The '30m Rule':**  
Strict geofencing prevents false positives when the ferry is idling near the shore.

# The Memory: PostgreSQL & Backend State

## PostgreSQL Schema

ais\_data

Historical raw AIS messages

---

ais\_latest\_positions

Optimized for fast map lookups

---

ferry\_outages

Log of service interruptions (Suspensions)

---

push\_subscriptions

VAPID endpoints for user alerts

**Persistence  
& Retrieval**



## Express.js Endpoints

GET /api/ferry

Current Service Status

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GET /api/weather

Conditions & Alerts

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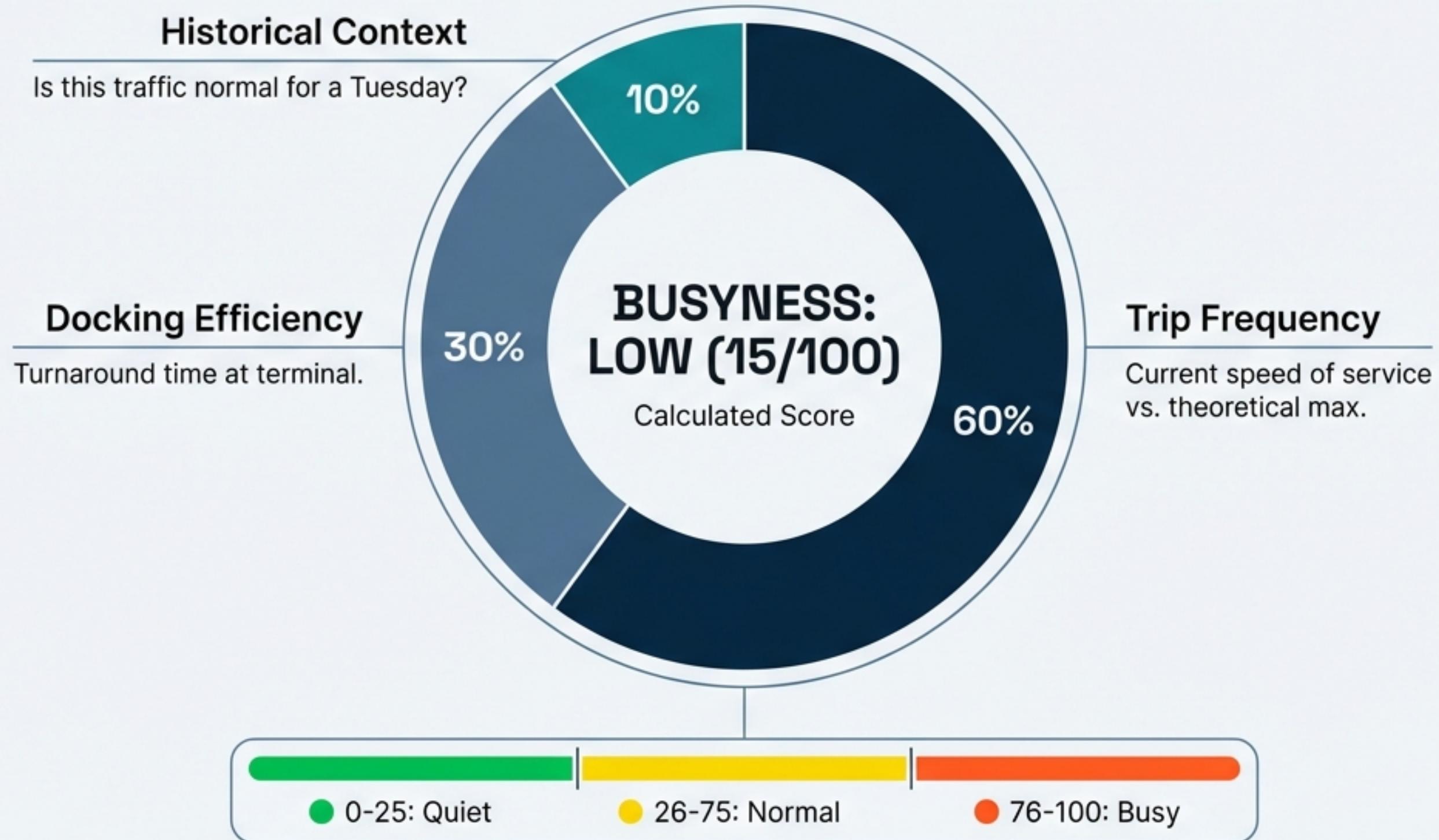
GET /api/ferry/rolling-history

Predictive Analytics Data

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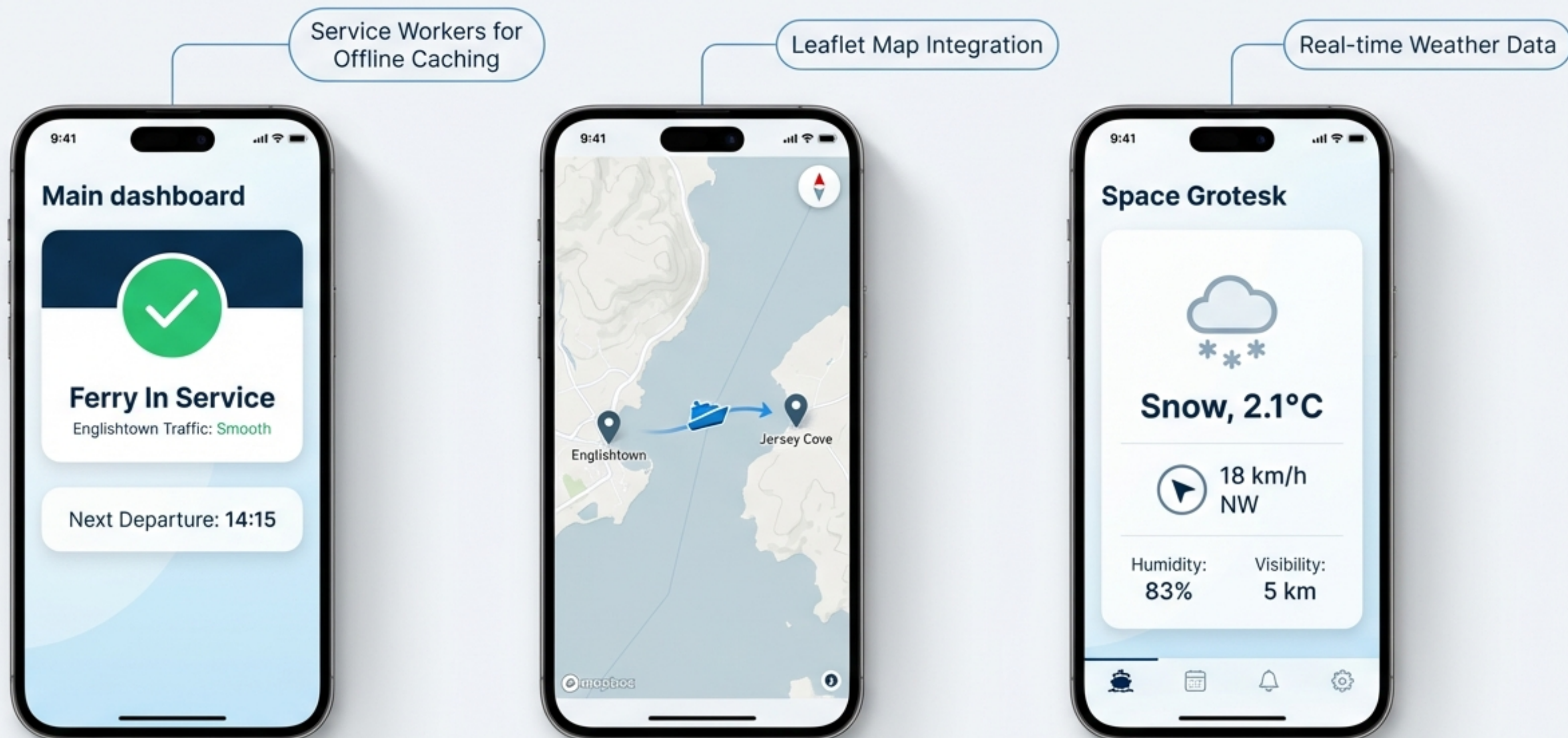
# The Intelligence: Smart Busyness Algorithm

Translating raw signals into human decision-making data.



# The User Experience: React PWA

Offline-first design for rural connectivity.



# Proactive Communication

## Smart Push Notification Engine



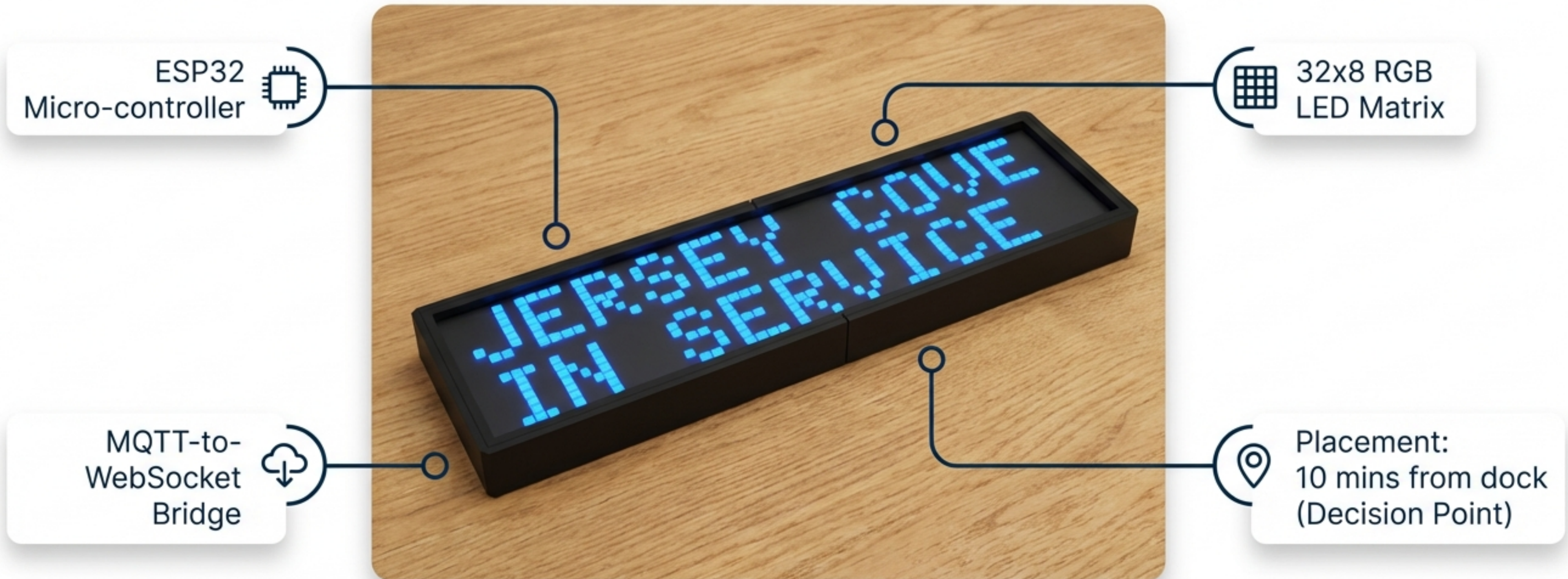
### Logic Hierarchy

1. **Critical (High Priority):** Ferry Suspended / Resumed. (Instant Alert)
2. **Medium Priority:** Weather Warnings (Environment Canada) & Community Events.
3. **Low Priority:** E-commerce shipping updates.

Uses Web Push API with VAPID authentication.  
Server deduplicates alerts to prevent spamming.

# Bridging Digital & Physical

The WLED Matrix Display for at-a-glance status.



# Culture, Commerce & Community

Transforming a utility tool into a community hub.



## Fiddle Tunes

Curated Cape Breton playlists for the wait line.



## Local Shops

Directory of Northshore businesses.



## Community Events

Garbage pickup & church service schedules.






## Merch Shop

Supporting the project via Stripe integration.

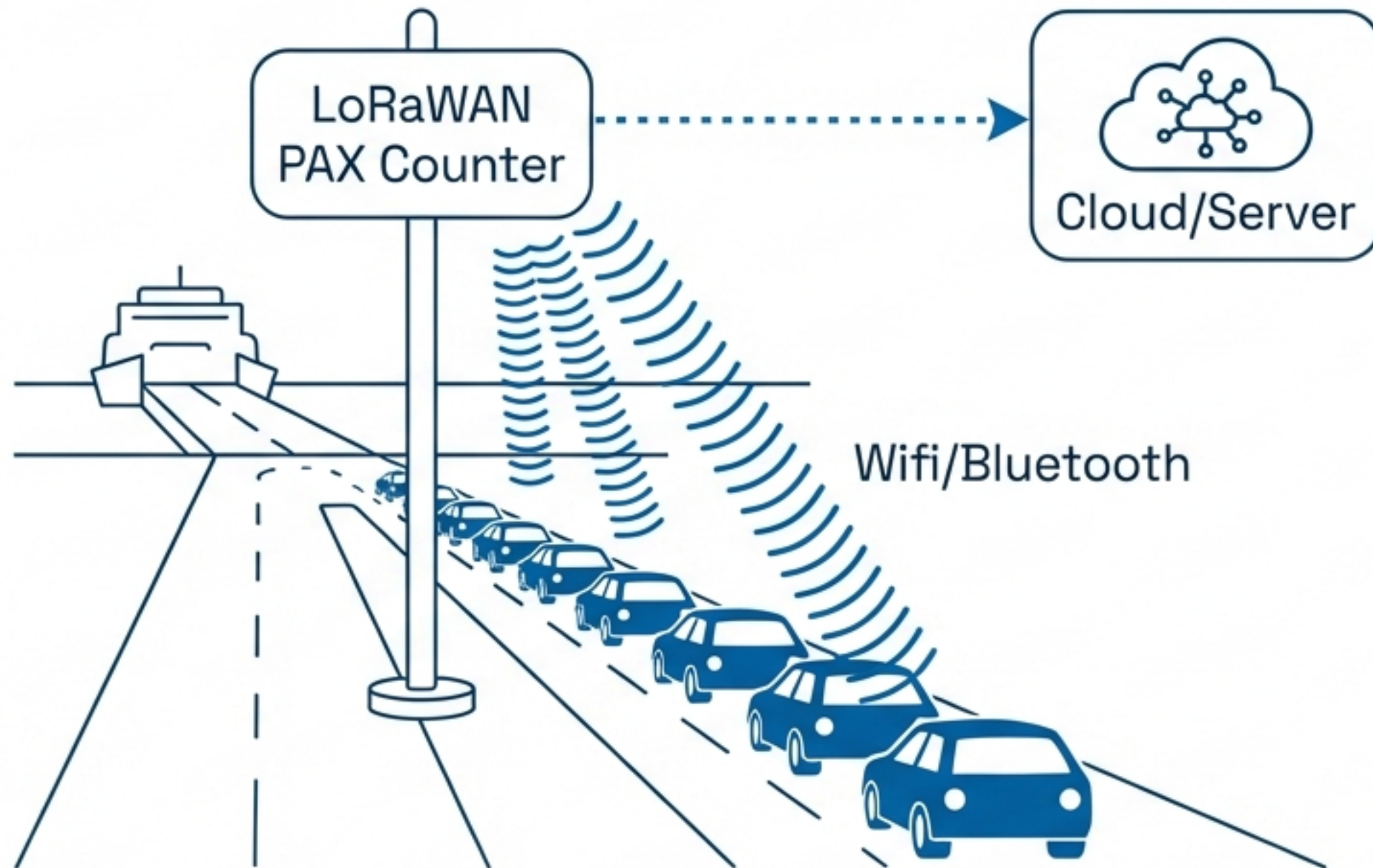
# Building Tech in the Wild

## Operational Challenges & Engineering Solutions

	Challenge	Solution	Visual
<b>Environmental Hardship</b>	Sensors freezing in winter; harsh maritime salt air	Redundant integration with Environment Canada API feeds	
<b>Human Error</b>	Captain forgets to enable AIS transponder	Community reporting mechanism & Coast Guard alerts	
<b>Connectivity</b>	Rural internet outages and spotty cell service	PWA Offline Mode & Lightweight Docker Containers	

# Future Roadmap: PAX Counters

Moving from “Is it running?” to “How long is the line?”



**Problem:** AIS tracks the boat, not the cars.

16th car = **25 min wait.**

**Solution:** Counting device signatures (Bluetooth/WiFi) to estimate queue length.

**Tech:** Battery powered, **LoRaWAN transmission** (No power/internet at dock).

# Empowering the North Shore



ferrylight.online

Open Source  
on GitHub

Contact:  
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Status:  
v5.2.6 Beta