CitySync: Real-Time Waterway & Bridge Intelligence

Smarter waterways. Safer bridges. Seamless movement.

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1. Overview

CitySync is a real-time **infrastructure intelligence platform** that monitors movable bridges, vessel traffic, and surrounding infrastructure to keep waterways flowing and cities moving.

We combine **AI**, **sensor data**, and **marine navigation systems (AIS/GNSS)** to predict bridge openings, track vessel behavior, and deliver live insights to both **captains** and **agencies**.

From the **Brickell Avenue Bridge** to ports and canals nationwide, CitySync bridges the gap between **marine freight** and **urban mobility**.

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2. The Problem

Every year, congested waterways and unpredictable bridge openings cost **millions in lost time and fuel**, while also creating **safety risks** for vessels and motorists alike.
 Bridge tenders, captains, and agencies operate in **data silos**, relying on radios, manual logs, and outdated systems.

The result:

- Missed opening windows

- Barge delays and truck congestion

- Lack of compliance visibility

- Public frustration and inefficiency

3. The Solution: CitySync

CitySync fuses **AI-driven analytics** with **real-time bridge telemetry** and **vessel movement data** to create a unified operational picture.

We provide:

- **Live bridge status & activity tracking**

- **Predictive AI models** that forecast opening windows, durations, and congestion

- **Compliance dashboards** aligned with **33 CFR §117.305**

- **Nereus**, a vessel-side navigation assistant that helps captains time bridge approaches safely

- **Agency dashboards** for FDOT, DEM, and the Miami River Commission — offering analytics, reports, and alerts

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4. Benefits by Audience

🚢 For Maritime Operators

- Real-time bridge opening forecasts

- Route optimization and safe passage guidance

- Predictive alerts for congestion and curfews

- Reduced idle time and fuel consumption

🏛️ For Government & Agencies

- Automated compliance tracking for §117.305

- Reports for state and federal partners

- Live dashboards for EOC and operations centers

- Improved coordination with Coast Guard, FDOT, and local bridge tenders

🏗️ For Infrastructure Planners

- Data-driven insight for capital improvement priorities

- Economic impact analysis for freight throughput

- Evidence-based support for grant and resilience funding

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5. Technology

CitySync integrates across existing systems to create a **multi-layered awareness platform**:

- **AI Agents** – *Kairos* (predictive openings), *Nereus* (vessel routing), *Athena* (bridge synchronization)

- **Data Sources** – AIS and CitySync bridge telemetry

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6. Pilot Deployment: Miami River

CitySync's Miami River deployment demonstrates the platform's **Technology Readiness Level (TRL 7)** in real-world conditions. Currently tracking **Brickell Avenue** and **Miami River** bridges, CitySync provides live operational intelligence for:

- Freight and barge operators

- FDOT District 6

- Miami River Commission

- Emergency Management and Urban Mobility partners

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7. Outcomes & Impact

CitySync creates a **data-driven foundation** for the future of maritime-urban infrastructure:

- 30% reduction in vessel idle time

- 40% improvement in incident response speed

- 100% compliance traceability with federal standards

- Scalable framework for other waterway corridors nationwide

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8. Vision

CitySync aims to connect **every movable bridge and vessel** in America's inland waterways through a unified, predictive infrastructure network.

By fusing **AI**, **open data**, and **agency collaboration**, we ensure **safe, efficient, and transparent movement** — from ports to cities to people.

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9. Call to Action

Let's make America's waterways intelligent.
Partner with CitySync to deploy pilot projects, enhance compliance reporting, and modernize bridge operations.

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