Elevator Pitch

In 2025, Dublin Bus hit a record 165 million passengers, yet 'Ghost Buses' remain a critical friction point. As I experienced on Route 16, apps like Google Maps often show a 'scheduled' bus that doesn't exist, while street signs stay blank. I'm pitching Active-Sync, a data-validation middleware that eliminates this information conflict. By requiring a physical 'Service Heartbeat'—driver login plus GPS motion—before any trip is broadcast, we ensure that if a bus isn't physically moving, it's removed from every app instantly. For €15k, we move from providing data to providing the truth.

Challenges being addressed

1. The Trust Gap (Customer Challenge)

Information Conflict: Passengers currently face a "dual reality." Third-party apps (Google Maps) often show "Scheduled" data for a bus that hasn't left the depot, while street-level signs (RTPI) stay blank. This forces users to choose which screen to trust, often leading to 20+ minutes of wasted time waiting for a "Ghost Bus."

The "Lure" Effect: High-authority digital interfaces (Google/Apple) give passengers false confidence. By showing a countdown for a non-existent bus, the system actively punishes users for choosing public transport over private cars or taxis.

2. Data Integrity & "Ghost" Analytics (Operational Challenge)

Unreported Cancellations: Currently, the system lacks a "Force-Kill" logic for trips that fail to start. If a driver is delayed at the depot or a bus is pulled for maintenance, the public API continues to push the static timetable as if the trip is active.

The "Invisible" Bottleneck: Without a verified "Service Heartbeat," Dublin Bus management cannot easily distinguish between a GPS hardware failure (where the bus is running but invisible) and a service cancellation (where the bus never left). This makes data-driven scheduling optimization nearly impossible.

3. Strategic & Regulatory Friction (Organizational Challenge)

NTA Performance Compliance: Dublin Bus is measured on reliability and "lost kilometers." Inaccurate real-time data leads to higher complaint volumes (nearly 6,000 in early 2025) and potential fines/reputational damage.

Scale vs. Reliability: As passenger numbers hit a record 165 million, the system is under immense pressure. The challenge is maintaining reliability at scale without a massive, expensive overhaul of existing GPS hardware.

The Background

1. A Record-Breaking Network Under Pressure

In 2025, Dublin Bus achieved a historic milestone, carrying 164 million passengers—a growth of 5 million in just one year. As Ireland’s largest transport operator, it manages a fleet of 1,100 "supercomputers on wheels." However, this record-breaking demand has exposed a critical gap in data integrity, specifically regarding service reliability and communication.

2. The "Ghost Bus" Crisis (NTA Data Evidence)

Despite the network's growth, "Ghost Buses"—services that appear on digital timetables but never physically arrive—have become a systemic issue. National Transport Authority (NTA) data reveals that in the first five months of 2025 alone, there were 5,984 formal complaints regarding delayed, cancelled, or "ghost" services. This represents a "run rate" of roughly 300 complaints per week, primarily driven by the Information Conflict between digital apps and street reality.

3. The User Experience (The Route 16 Scenario)

This data discrepancy is most visible on high-frequency corridors like Route 16. During recent service disruptions:

Digital Feeds (Google Maps/Apple Maps): Frequently default to "Scheduled" (static) data when a live GPS ping is lost or a driver fails to log in. This creates a false countdown, luring passengers into waiting.

On-Street Displays (RTPI): Correctly remain blank as they cannot find a "Live" handshake.

The Trust Gap: The passenger trusts the high-authority digital interface on their phone, ignores the blank street sign, and waits for a bus that does not exist. This Information Conflict punishes users for using digital tools and erodes the trust required to keep passengers on public transport and out of private cars.

4. Strategic Alignment: "Evolving for Tomorrow"

The Dublin Bus strategy (2024–2027) identifies "Data-Driven Organisation" and "Customer Experience" as two of its core pillars. Currently, Dublin Bus is penalized for "lost kilometers" and reliability failures. Addressing the "Ghost Bus" problem isn't just a tech fix; it is a strategic necessity to protect the organization’s reputation and meet NTA performance standards in an increasingly congested city (ranked 10th most congested globally in 2025).

The Need

1. Elimination of the "Information Conflict"

There is a critical need for a Single Source of Truth across the Dublin Bus data ecosystem. Currently, the system permits two conflicting realities to exist simultaneously: the "Scheduled Reality" on third-party apps and the "Physical Reality" at the bus stop. We need a logic gate that ensures a bus is only visible to the public once its physical existence is verified.

2. Restoring Digital Trust

As Dublin Bus moves toward a "Smart City" model, the passenger's smartphone is the primary interface. If that interface "lies" to the user by showing a countdown for a non-existent Route 16, the digital strategy fails. There is an urgent need to protect the integrity of the digital brand so that passengers can plan their lives with 100% confidence in the data they see.

3. Operational Visibility and "Ghost" Diagnostics

Dublin Bus management currently lacks a "Binary Filter" to distinguish between:

Hardware Failure: The bus is running, but the GPS/Radio is down.

Service Failure: The bus never left the depot due to staffing or mechanical issues. There is a need for Heartbeat Audit Logs that provide real-time visibility into why a service is missing. This data is essential for a "Data-Driven Organization" to optimize rosters, identify depot-exit bottlenecks, and reduce NTA reliability penalties.

4. Low-CapEx, High-Velocity Innovation

With a record 165 million passengers and rising congestion, Dublin Bus cannot wait for a multi-year, multi-million euro hardware overhaul to fix the "Ghost Bus" problem. There is a need for a Software-Defined Solution that:

Integrates with existing Wayfarer (ticketing) and GPS hardware.

Can be piloted immediately on high-pressure corridors (like Route 16).

Fits within the €15,000 seed funding model to provide a rapid "Proof of Concept."

5. Accountability to the Public

With nearly 6,000 formal complaints in early 2025, the public is demanding transparency. There is a need to move from a "reactive" stance (answering complaints after the fact) to a "proactive" stance (removing the bus from the app before the passenger even reaches the stop).

Why Now

1. The "165 Million" Breaking Point

Dublin Bus carried a record 164-165 million passengers in 2025. While this growth is a success, the sheer volume of users means that a single "Ghost Bus" on a high-frequency route like the 16 now affects hundreds of people simultaneously rather than dozens. The scale of the network has outgrown the reliability of "Scheduled" data failovers.

2. The Post-Complaints Crisis

Following the 5,984 formal complaints regarding service reliability in early 2025, public patience has reached a tipping point. Social media sentiment and NTA performance reviews indicate that "Ghost Buses" are now the #1 barrier to public transport adoption in Dublin. Solving this is no longer a "nice-to-have" feature; it is a reputational emergency that must be addressed before the 2026/2027 fleet expansion.

3. The "Smart Dublin" Alignment

With the 2026 Dublin City Centre Transport Plan now in full effect, the city is being redesigned to prioritize public transport. However, infrastructure changes (bus lanes/gates) only work if the digital infrastructure matches. As Dublin strives to be a global "Smart City," having a 19th-century "static timetable" as a fallback for 21st-century apps is a strategic misalignment that must be fixed immediately.

4. NTA Financial & Performance Pressure

The NTA has signaled stricter enforcement of reliability metrics for 2026. Dublin Bus is under increasing pressure to reduce "Lost Kilometres." By implementing the Active-Sync protocol now, Dublin Bus can proactively manage its data accuracy, potentially saving thousands in performance-related penalties and improving its standing in quarterly NTA reports.

5. Availability of Low-Cost Middleware

Technologically, we are finally at a point where Edge Computing and API-first architecture allow us to build a "Logic Bridge" without replacing the hardware on 1,100 buses. For a €15,000 seed investment, we can now achieve what would have cost millions five years ago. This is the moment to pilot a high-velocity, software-defined solution.

Value - In a few sentence describe the value this project will bring to Dublin Bus. (Limited to 4000 characters.): How will Dublin Bus and the travelling public benefit from this project ? What measurable outcomes can be applied to the success of your proposal?

Value to Dublin Bus and the Travelling Public

The primary value of the Active-Sync Truth Protocol is the restoration of digital trust. By eliminating the "Information Conflict" where apps show a bus that does not exist, we remove the

#1 psychological barrier to using public transport: the fear of being stranded.

For the Travelling Public: Passengers on high-traffic routes like the Route 16 will no longer be "lured" into waiting for ghost buses. Instead of a misleading countdown, the app will reflect the physical reality of the street sign. This allows passengers to make immediate, informed decisions about their travel (e.g., choosing an alternative route or mode), respecting their time and reducing the "commuter anxiety" that currently drives people back toward private cars.

For Dublin Bus: Reputational Protection: Directly addresses the source of nearly 6,000 formal complaints (2025 data), transforming Dublin Bus from a reactive respondent to a proactive provider of accurate information.

Operational Intelligence: For the first time, management will have a "Binary Filter" to distinguish between hardware failures (invisible buses) and service failures (cancelled buses). This high-fidelity data is essential for the "Evolving for Tomorrow" goal of becoming a truly data-driven organization.

Financial Efficiency: Accurate real-time reporting helps mitigate NTA performance penalties related to "lost kilometers" and reliability metrics, which have historically cost the organization millions in fines.

Measurable Outcomes for Success

To evaluate the success of the 12-week pilot on Route 16, we will apply the following KPIs:

Elimination of Data Discrepancy: Achieve a 100% reduction in instances where a third-party app (Google/Apple) displays a "Scheduled" countdown for a service that has no "Active Heartbeat" (Driver Login + Motion).

Reduction in Ghost-Related Complaints: Track a measurable decrease in "No-Show" complaints specifically for the Route 16 corridor during the pilot period compared to the previous year's baseline.

Data Latency Benchmark: Ensure the "Force-Kill" signal is broadcast to the public API within 120 seconds of a missed heartbeat, providing near real-time updates to the public.

Operational Insights: Delivery of a "Ghost Audit Dashboard" for the Route 16, categorizing every missed service by cause (e.g., Depot Exit Delay vs. GPS Signal Loss), providing a blueprint for network-wide optimization.

Cost

For this project, I am requesting the full €15,000 seed funding allocated to the Data & Visualisation challenge.

This isn't just a 'fee'; it is a high-efficiency investment to solve the Route 16 ghost bus problem. We aren't building expensive hardware or buying new buses; we are building a software 'Logic Bridge.' This €15,000 will cover a 12-week intensive pilot where we:

Audit the Data: Map the actual 'Ghost' events on the Route 16 to prove the scale of the misinformation.

Build the Filter: Develop the API wrapper that triggers the 'Force-Kill' signal when a bus doesn't move.

Verify the Results: Ensure that by week 12, what a passenger sees on their phone is 100% synchronized with the physical reality of the bus.

We are offering a low-CapEx solution to a high-cost reputational problem. For the price of a small marketing campaign, we are fixing the core integrity of your passenger data.

Time - What is the time funding request to Dublin Bus?: What is the ask of Dublin Bus to help you deliver this project? Is it time with experts, devices, hardware etc? Please Note: For all proposals by Dublin Bus employees, the project will need to be worked on outside of your business hours.

To deliver the Active-Sync protocol within 12 weeks, my primary request isn't hardware—it is access to your data experts and live feeds. Specifically, I am asking for:

Data Access: Integration with the GTFS-Realtime and AVL (Automatic Vehicle Location) feeds for Route 16, as well as access to historical 'Wayfarer' login logs. This is essential to map exactly when a driver logs in versus when a 'ghost' appears on Google Maps.

Expert Consultation: Approximately 2 to 4 hours per fortnight with a member of your IT/Data team. I need to understand the 'failover' logic currently used when a GPS ping is lost so that my middleware can correctly trigger the 'Force-Kill' signal.

Operational Context: A single walkthrough with a Depot Manager at the Route 16 terminus. I need to see the physical 'Log-in' process for a driver to ensure my logic bridge mirrors the real-world workflow.

I am not asking for new buses or physical devices. I am asking for the 'Digital Keys' to the data stream and the time of the people who know it best. By giving me this access, you enable us to turn your raw data into a validated source of truth for every passenger on the 16.

Maturity - Describe the Technology Readiness Levels (TRL) / Business Readiness Levels (BRL): Is this proposal as it stands, an idea, something that has been developed to early concept stage, or is ready to go into the business directly?

To be completely direct: this proposal is currently at the Idea and Conceptual Design stage (TRL 2). Technological Maturity (TRL 2): I am not coming to you with a finished software product; I am coming to you with a technical blueprint to fix a specific logic failure. I have identified the 'Ghost Bus' root cause—the lack of a cancellation signal when a scheduled trip fails to physically start. I have mapped out the logic for the 'Active-Sync' middleware, but it has not yet been built or tested against live systems. The purpose of this €15,000 funding is to move from theory to prototype.

Business Maturity (BRL 2): The 'Product-Market Fit' is already clear. The 'market' is the thousands of frustrated passengers, and the 'product' is a verified data feed. We know the problem is significant—documented by nearly 6,000 formal complaints in 2025. I have defined the value proposition and the ROI (Return on Investment) in terms of reduced NTA penalties and restored public trust.

Why this is the right stage for a DBI Pilot: Innovation challenges are at their best when they catch a high-potential idea at the architecture stage. By starting at TRL 2, Dublin Bus has the opportunity to co-design this solution. We can ensure the 'Heartbeat' logic is built specifically to integrate with your Wayfarer logins and AVL feeds from day one, rather than trying to force a generic software to fit your unique operations.

Method - Describe the steps you will take to complete the project, including any major milestones. (Limited to 4000 characters.) The work to be undertaken is (including phasing):

Because this project is currently at the conceptual blueprint stage, our methodology is designed to move systematically from logic-mapping to a live prototype. We are not guessing; we are building. The 12-week pilot is divided into three distinct phases:

Phase 1: System Mapping & Data Audit (Weeks 1–4)

The first step is to get 'under the hood' of the data.

Requirement Gathering: I will meet with your IT and Depot teams to map the exact data journey—from the moment a driver logs into the Wayfarer machine to the moment a GPS ping is sent to the AVL (Automatic Vehicle Location) system.

The 'Ghost' Audit: We will analyze 30 days of historical data for Route 16. We will look for every instance where a trip was 'Scheduled' but never produced a 'GPS pulse.' This establishes our baseline for success.

Milestone 1: A 'System Architecture Document' that identifies exactly where the 'Active-Sync' logic gate will sit.

Phase 2: Middleware Development & Integration (Weeks 5–8)

This is the core build phase.

API Wrapper Development: I will build the software layer (the middleware) that listens to both the schedule and the live heartbeat.

The Logic Gate: We will code the 'Force-Kill' trigger. If the system sees a scheduled departure on the 16 but detects no driver login or motion within 120 seconds, the middleware will generate a 'Cancellation' status for that specific trip ID.

Closed-Loop Testing: We will run the software in a 'sandbox' environment using live data but without broadcasting it to the public yet, ensuring the logic is 100% accurate.

Milestone 2: A functional 'Active-Sync' Prototype ready for live integration.

Phase 3: Live Pilot & Validation (Weeks 9–12)

We take the system live for a single corridor.

Route 16 Deployment: We will connect the middleware to the public-facing GTFS-Realtime feed for Route 16.

Public Sync: We will monitor the results in real-time to ensure that when a bus is 'killed' by our system, it disappears from Google Maps and remains blank on the street signs—eliminating the information conflict.

Performance Review: We will measure the reduction in data-discrepancy events and present a final report on scalability for the entire Dublin Bus network.

Milestone 3: Final Pilot Report and a 'Go/No-Go' recommendation for network-wide rollout.

Project Structure: Who is involved in delivering this project, from project manager to team members, and how will project updates to Dublin Bus be provided and how often?*

As the founder and lead on this project, I will act as the Principal Product Manager and Technical Lead. My approach is lean and focused on high-velocity development. However, because this is an integration project, success depends on a 'Pod' structure involving key Dublin Bus stakeholders.

1. The Project Team

Project Lead (Me): I am responsible for the end-to-end delivery: from the initial data audit and middleware architecture to the final coding and pilot validation. I will be the single point of contact for the DBI program.

Technical Advisor (Dublin Bus IT/Data): I am requesting a designated contact who understands the current AVL (Automatic Vehicle Location) and GTFS-R feed structure. This person doesn't need to do the work, but they will provide the necessary 'internal map' for my code to integrate safely.

Operational Liaison (Depot/Route 16): A point of contact (likely a Depot Manager or Inspector) to verify the physical 'Heartbeat'—helping us correlate the digital data with the actual driver log-in experience at the start of a shift.

2. Project Updates & Transparency

I believe in radical transparency to ensure we don't drift from Dublin Bus's operational requirements. We will use a 'Sprint-Based' update schedule:

Weekly 'Pulse' Email: Every Friday, I will provide a concise status update covering: Work Completed, Current Blockers, and Goals for Next Week.

Bi-Weekly Progress Demo: Every 14 days, I am proposing a 30-minute virtual 'Show & Tell.' This is where I will demonstrate the current state of the logic bridge—moving from data visualizations in Phase 1 to a working API prototype in Phase 2.

Milestone Gates: At the end of each of the three 4-week phases, I will submit a formal 'Phase Gate Report.' This will outline the technical health of the project and confirm we are ready to proceed to the next stage of the pilot.

3. Communication Tools

To keep the administrative burden low for Dublin Bus, I will provide a shared Digital Dashboard (e.g., Trello or a custom status page). This allows your team to see the project's 'Health' and milestone status at a glance, 24/7, without needing a meeting.

Project Dependencies Specify the dependencies on Dublin Bus or 3rd Parties*

To move this project from a technical blueprint to a live pilot on Route 16, there are three critical dependencies on Dublin Bus and third-party data providers. We cannot 'Sync the Truth' without access to the following:

1. High-Fidelity Data Access (Dublin Bus Internal)

The core of the Active-Sync logic is the 'Handshake' between a scheduled trip and a physical event. I am dependent on access to:

AVL (Automatic Vehicle Location) Feeds: A live stream of GPS pings for the Route 16 fleet.

Wayfarer/Ticketing Login Data: We need to know the exact timestamp when a driver logs into a specific vehicle for a specific route. This is the 'Primary Heartbeat' that tells the system the bus is no longer a 'Ghost.'

2. API Integration (NTA / Third-Party)

Our solution sits between Dublin Bus and the public. We have a dependency on the National Transport Authority (NTA) data infrastructure:

GTFS-Realtime Feed Permissions: To prove the pilot works, we eventually need the ability to push a 'Cancellation' or 'Force-Kill' status to the public feed for Route 16.

Latency Cooperation: We are dependent on the refresh rates of third-party consumers (Google Maps, Apple Maps, Transit). Our logic only works if their systems respect the 'Cancelled' flag we generate in real-time.

3. Depot-Level Context (Operational)

To ensure our software doesn't trigger 'False Kills' (e.g., a bus that is running but has a temporary GPS glitch), we are dependent on:

Technical Consultation: A one-time briefing with the Dublin Bus IT team to understand the current 'Failover' protocols. We need to know what happens currently when a radio signal is lost so our middleware can distinguish between a Technical Fault and a Service Cancellation.

4. The €15,000 Seed Fund (Financial)

Finally, the project's timeline is dependent on the DBI funding to secure the specialized cloud infrastructure and API development time required to build a secure, high-availability middleware that can handle thousands of pings per second without crashing."

Project Outputs/Outcomes Specify Outputs/Outcomes of the project both tangible and indirect

Because we are starting from a conceptual blueprint, the outputs of this 12-week pilot are focused on providing Dublin Bus with a functional solution and the data to prove it works.

1. Tangible Outputs (The 'Deliverables')

The Active-Sync Middleware Prototype: A functional software layer that connects to Dublin Bus data feeds and generates a 'Force-Kill' signal for services without a physical heartbeat.

The 'Ghost Audit' Dashboard: A real-time visualization tool for the Route 16 corridor. This will show Dublin Bus management exactly which scheduled services were 'killed' by the logic gate and why (e.g., no driver login vs. no vehicle motion).

API Documentation: A technical 'Playbook' detailing how the middleware integrates with your existing systems, providing a clear map for how this could be scaled from one route to the entire 1,100-bus fleet.

The Pilot Impact Report: A data-driven document comparing 'Ghost Bus' events on Route 16 before and after the pilot, proving the reduction in data discrepancies.

2. Indirect Outcomes (The 'Impact')

Restoration of Passenger Trust: By ensuring that what is on the screen matches what is on the street, we eliminate the 'Information Conflict.' Passengers regain the confidence to plan their lives around your services.

Reduction in Complaint Volume: Directly addressing the source of nearly 6,000 complaints from 2025. This reduces the administrative burden on your customer service teams, allowing them to focus on more complex issues.

Operational Accountability: For the first time, you will have a 'Binary Truth' regarding service failures. This allows for better post-shift analysis and more accurate reporting to the NTA regarding 'Lost Kilometres.'

Reputational Leadership: Dublin Bus will be seen as a proactive innovator that listened to public frustration and used an agile, software-defined approach to fix a systemic city-wide issue.