

DeliveLink: Design and Development of a Verified Hyperlocal Delivery and Dispatch System

Overview:

This project focuses on the design and development of a verified hyperlocal delivery and delivery dispatch system designed specifically for Hyper-Local Delivery Service Providers (HLDSPs) in [insert area here]. Currently, many local delivery groups operate through an informal "Social Media Logistics" model, relying on Facebook and Messenger for order intake, dispatching, and customer updates. While accessible, this reliance on unstructured social platforms has created critical systemic failures, most notably a Security Gap where anonymous users facilitate identity fraud and "joy buying," and Operational Blindness where neither management nor customers can track active deliveries in real-time.

General Problem:

Organizations that are established in this manner typically face the following problems:

- **Identity Verification Protocols:** Due to the anonymity of social media, these establishments are currently prone to identity fraud / fraudulent bookings even with established identity verification policies in place.
- **Operational Blindness:** They typically lack real-time visibility regarding the status of a delivery. Both the management and the customers are forced to rely heavily on manual inquiries (typically via chat or call) to track orders, which can cause bottlenecks to the management and "waiting anxiety" to the customers.
- **Information Fragmentation:** Critical order data (such as addresses, item specifications, and contact details) are trapped within unstructured message threads, which is prone to occasional human error during order transcription, as well as preventing the organization from maintaining a reliable historical database.
- **Manual Dispatching Latency:** The reliance on sequential messaging to assign riders to deliveries creates a "scalability ceiling". The absence of an automated dispatching mechanism leads to increased pickup times and inefficient fleet utilization during peak hours.
- **NOTICE:** Allowing conducting an interview will solidify the existence of these problems and perhaps discover new problems that are unthought of and unmentioned in this draft.

Proposed Solution:

The proponents propose the “**Development of a Logistics & Errand Ecosystem for Hyper Local Delivery Service Providers**”, which is a multi-tier system architecture featuring the following:

- **Customer Mobile App:** a structured interface in which the user can select a delivery service provider and view the different establishments that the organization services and identity verification through OTP and ID upload.
- **Rider Mobile App:** with live GPS location pushing and a "Service Completion Code" system to verify the status of the current delivery.
- **Multi-Tenant Management Portal:** serves as a sort of "Command Center" for real-time monitoring, automated dispatching, and fraud management.
- **Public Website:** free to the public to view to gain publicity to users, provide contact details to reach out to the establishment, as well as a trusted source to install the mobile application.
- **Dedicated Server:** where the data will live and will be partitioned into data instances for each registered organization that will be the target locale.

Significance of Study

- **For Local Small / Medium Enterprises:** By having multiple organizations on one platform, you create a unified professional standard for delivery across the entire municipality, which professionalizes operations and protect the brand from fraud. Industry data shows that first party (in-house) platforms achieve **90% order accuracy**, significantly higher than the 85% found in multi-vendor third-party apps.
- **For Riders:** To ensure they are being dispatched to verified customers, reducing wasted fuel and time on fake orders. By implementing a verification layer, the system provides an "Identity Shield" for local SMEs, protecting riders from the "joy-buying" incidents
- **For Customers:** To provide a faster (up to **10.69% faster** based on industry benchmarks) and more transparent experience by providing real-time information relevant to their orders.
- **For Future Researchers:** To provide a reliable source that is free to expand upon, as well as to provide a guide on how a project like this can possibly be implemented.

Scope and Delimitation:

- **Geographic Scope:** The application will be geo-fenced to the municipality of [insert area here].
- **Multiple partner organizations:** Multiple independent delivery organizations specializing in food / errand delivery that relies on Facebook / Messenger as means of operation within [insert area here]
- **Delimitations:** The system will focus on Cash-on-Delivery (COD) and automatic GCash verification rather than direct bank API integration to maintain low operational complexity.

Features and Functions:

Customer Mobile App

- **Multi-factor authentication** using OTP (One Time Password) and ID Upload to prevent “joy buying” and anonymous fraud.
- **A structured interface** displaying the various local businesses and SMEs (Small / Medium-sized Establishments) the organization’s services.
- **Organization/Provider Selection** before seeing food establishments. The customer should first select their preferred Delivery Service Provider.
- **Order tracking** that provides a visual status indicator to eliminate “waiting anxiety” by showing the rider’s progress.
- Support for Cash-on-delivery and automatic GCash verification to keep complexity low.

Rider Mobile App

- **GPS Pushing** to constantly update the rider’s coordinates to the server for the server for management and customer visibility.
- **Service Completion Code** to verify and close out a delivery, ensuring the status is updated accurately.
- **Verified dispatch queue** providing a list of incoming orders from verified customers to ensure riders don’t waste fuel on fake bookings.

Multi-Tenant Management Portal

- **Automatic dispatching** mechanism system that assigns riders to deliveries automatically to break the scaling issues faced with manual messaging.
- **Independent Fleet Management** in which each organization must be able to register and manage its own set of riders independently within the shared ecosystem.

- **Fraud Management tools** to review flagged accounts or suspicious booking patterns.
- **History Storing Database** serving as a centralized repository for addresses, item specifications, and contact details to replace fragmented chat threads.
- **Organization-specific sub-dashboards** to keep relevant data invisible to the other organizations.

Public Website & Infrastructure

- **A web presence** providing contact details and a verified “trusted source” link to download the mobile applications.
- **A dedicated server** acting as a centralized backend to host and modify data for the centralized office.
- **Centralized cloud hosting** that handles high-volume traffic from multiple delivery fleets simultaneously.
- **Geofencing logic** built into the system to restrict operations specifically high-traffic areas