A Cost-Effective Smartphone Solution for Traffic Management in Marine Ports

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Outline

What is truck turnaround time?

How it reflects performance of terminals?

Existing Problems with its measurement

How it has been measured

Proposed solution

Conclusion & future work

Acknowledgement
What is Truck Turnaround Time

The time taken for a truck to enter then exit a terminal.

An indicator of Port performance

Traditionally, using expensive GPS equipments

"Derived from RFID data, and excludes lunch hour, breaks and trouble tickets." - PierPass

No consensus on how to measure or validate anyone’s measurement (lack of transparency)
Previous Work

Metropolitan Transportation Information System (METRIS)

by Digital Geographic Research Corporation

Expensive GPS equipment

No transparency

Not all parties involved

No real time report
Good Data Collection

Need for more accurate and less expensive devices to collect data

Good data leads to good analysis and better planning

Shorter truck turnaround time better performance in our freight system

Benefits to motor carriers, terminals, ports, cargo owners and above all, drivers
Categories of Truck Turnaround Time

Entrance Gate to Exit Gate

Entrance Queue to Exit Gate

Entrance Queue to Exit Queue

Entrance Gate to Exit Queue
Proposed Solution

Zlyne phone application

Through a simple web interface (zlyne.com)

Current exact location of a truck on a map

Truck turnaround time filtered by:

  hourly, daily, weekly, monthly and yearly

  each terminal

  motor carriers can filter for any driver
Why use Zlyne?

Our method uses sensor rich smartphones

Accurate GPS signals fused with network signals

64% of American adults own a smartphone (from pewinternet.org)

Smartphones benefit from Geofencing technology

All phone data sent to a secure cloud (Zlyne.com) with real time access for all parties
The Zlyne Software

An iOS and Android application for smart data gathering.

Using Location-based Services

1. Geofences
2. Background Tracking

An intelligent administrative web application.

1. Register truck drivers
2. Assign trips to drivers
3. Gather and display data
Register a driver
Trip View
Settings View
Welcome!

ZLyne helps terminals and truck companies to reduce the amount of truck waiting in the lengthy queues at the terminal, therefore helping ports, terminals, truck companies and drivers.
# Trips

<table>
<thead>
<tr>
<th>ID</th>
<th>Trucking Company</th>
<th>Driver</th>
<th>Start Time</th>
<th>End Time</th>
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<td>8</td>
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<tr>
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<td>ACE Shipping</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Driver</td>
<td>John Doe - EZ Shipping</td>
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<td>ABCDEFG</td>
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<td></td>
</tr>
<tr>
<td>Chasis Number</td>
<td>Enter a Chasis Number</td>
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</tr>
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<td>Container ID ONE</td>
<td>Enter a Container Number</td>
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<td>Container ID TWO</td>
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<td>Pick Up Address</td>
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<td>Pick Up Zip</td>
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</table>
Drivers Last Locations

Filter By: Driver Id
Filter Value: Enter Filter Value

Go  Reset

Map of Torrance and Carson areas with a pin marker.
Edit Profile Change Profile Details

Current Password  **********
New Password
Confirm Password

Update  I forgot my password
Estimate distance between gates 5.7 miles
Conclusion and Future Work

A new low cost method of monitoring marine ports traffic

Transparent truck turnaround time and performance monitoring

Analysis of traffic data

Better planning by all parties based on traffic data
Acknowledgment

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Thank You

Q&A